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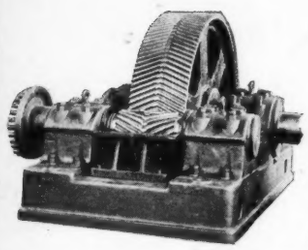
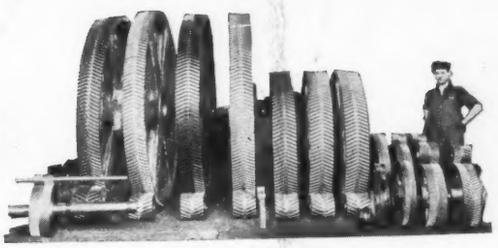
See Article on a Sump Constructed Under Difficulties to Lower Electric Peak, pages 627-630

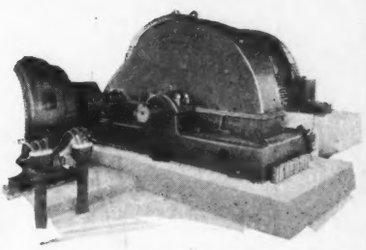
COAL AGE



Faweus Herringbone Gear Hoist Drive with Cover Removed.



Faweus Cut Herringbone Gears; All Sizes.



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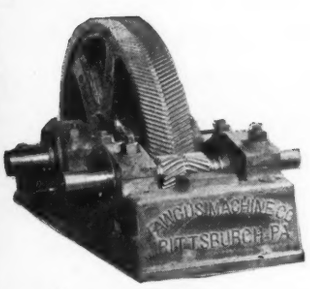
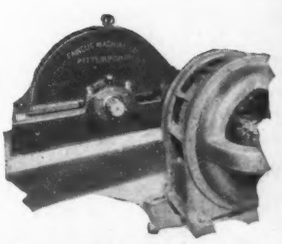
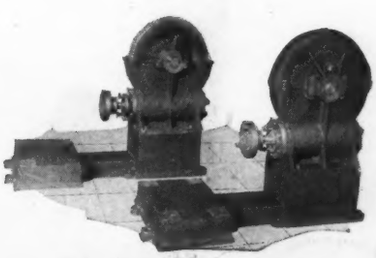


Faweus Herringbone Gear Fan Drive Cover Removed.



Faweus Herringbone Gear Fan Drive Connected to Motor.

Spurs Bevels and Worm Wheels



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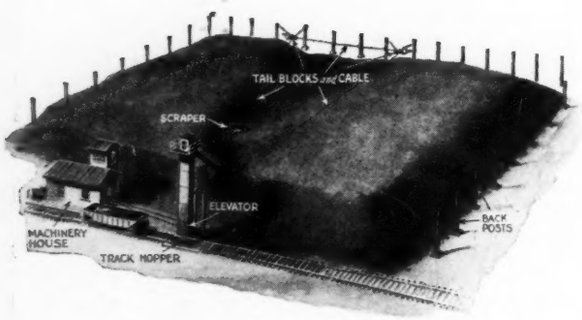

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COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

Volume 23 NEW YORK, APRIL 19, 1923 Number 16

A Battle of Publicity

ABANDONING for the time their usual forceful tactics for promoting the extension of their organization, the organized mine workers have turned the guns of publicity on the non-union coal operators. Beginning some months ago with the demand that all coal fields be unionized, they have lost no opportunity to assert that it is the fact that some operators have managed to stay without their fold that has been responsible for the ills of the coal industry. This summer it is to a battle of words rather than of bullets.

Colonel Stimson's arraignment, on behalf of the Special Committee of Bituminous Coal Operators, of the policy, purpose and methods of the United Mine Workers so far has brought forth nothing further in reply than an attempt to make light of the charges because they were prepared by two lawyers. Now there may be a deal of difference between a statement prepared for the operators by lawyers and one prepared for the miners' union by a newspaperman, and the difference may be due to the fact, as particularly stressed by the union's "release" of April 12, that the lawyers are highly paid. That fact seems to distress many.

At any rate, there has been nothing since the war that has served to solidify the ranks of the soft-coal operators as has this challenge of the union. Changing from a policy of defense to one of aggressive offensive, the operators' association has taken on new life. Union as well as non-union operators have rallied to the support of the Special Committee, of which John C. Brydon is chairman, for the committee is bent on taking the fight into the enemy's camp, via the same route selected by the union, that of publicity.

Causes of General Goethals' Troubles

GENERAL GOETHALS, in his official report to Governor Smith at the close of his service as Fuel Administrator for New York State, succinctly summarizes the situation that faced him. The New York law under which he functioned gave him all the authority and funds that could have been bestowed by a state legislature. General Goethals found, however, that the State of New York could grant him no power over coal mines in another state or over coal moving in interstate commerce, which meant all the coal that came into his jurisdiction. His control over prices was confined to retail dealers' margins, since he could in no wise influence the mine price or the freight rate. His function with respect to distribution was entirely that of seeing that after the coal reached the dealers' yards it was equitably apportioned among the household customers.

Because the production of coal is not interstate commerce and because shipments across state lines are, a State Fuel Administrator dependent on outside sources cannot increase his share of the total by depriving others of coal going to them. General Goethals found that he lacked authority to divert shipments within his state, that he could not speed up the movement of his own coal, could not fix prices to dealers, or control the quality of coal shipped to him. He complains that the Federal Fuel Distributor had no authority, which is entirely true, and that the Interstate Commerce Commission, which presumably had some authority under the federal law, was a "quasi-judicial body, not accustomed to executive action." He might have added that, with respect to his own situation, the Interstate Commerce Commission did not always exercise what measure of authority it had in accordance with the recommendations of the Federal Distributor, as suggested by the act of Congress.

What the General has to say with respect to the lack of authority conferred on the federal officials is quite true, but he might have accompanied it by the acknowledgment that in the act creating the Federal Fuel Distributor Congress gave him all the power, authority and jurisdiction it could under the limits imposed by the Constitution. It is particularly significant that after reciting the steps taken to insure the necessary use of substitutes for anthracite, he admits that such trouble as was experienced in New York State was occasioned by non-compliance with his orders. He says: "Difficulty was experienced in securing full compliance [with orders that substitutes be used], and in most communities where shortages were reported or crises threatened, investigation disclosed that such conditions were due to non-compliance with this order."

Which brings us to the heart of the matter. All of General Goethals' troubles and those of Mr. Woodin before him, as well as those of fuel administrators in other states, were due to shortage of anthracite. Had there been sufficient hard coal there would have been no fuel administrators, no high prices, no impure coal and rock delivered to consumers. But the country was short some thirty to forty million tons of production and had to face the winter with but 60 per cent of requirements for consumption. No amount of price fixing and regulation of distribution could, or ever can, make more tons of coal. There was non-union soft coal to substitute for union soft coal not produced last summer, but there was no non-union hard coal. And after the strike was settled there was soft coal of all kinds to make up the deficiency in anthracite, but people did not take kindly to its use, therefore the most of the trouble.

Plainly enough if this country can find no way to curb the power of the United Mine Workers and continues to submit to such unwarranted suspensions of mining as characterized the hard-coal strike of 1922, then, but not until then, is it time to discuss the technique of governmental regulation of price and distribution. Complete elimination of the comparatively small quantity of "fireproof" coal distributed, repression of the 5 per

cent of "higher price" tonnage reported by General Goethals and theoretically perfect distribution of available coal would not have relieved the shortage or obviated the use of substitutes. All these things, irritating as they were, were as nothing compared to the fact that because the United Mine Workers chose to exert their full "economic strength" they called a strike in the anthracite field and thus deprived householders of millions of tons of hard coal.

Reservoir Sump Systems an Operating Economy

BIG power bills are bringing operators to a recognition of the importance of having large sumps. A big underground reservoir is an assurance against the drowning out of the shaft in case of accident to the pumps or pipes, power failure or an excessive inflow of water. It is a cheap substitute for the large and expensive machinery that the power station, public or private, must introduce to take care of peak loads. Cheaper by far as a rule would be a few million gallons of storage than a few hundred kilowatt-hours of capacity. To avoid paying the latter the power company penalizes the operator, who, not having storage capacity, is obliged to add pumping to his other loads during the busy hours of the day.

In this issue of *Coal Age* an article describes the reservoir or sump system in the Isabella mine of the Hecla Coal & Coke Co. It is only one of many large sumps. Its interest lies in the utilization of airways for water storage and the problems thereby confronted and solved. Another large sump system is that in Eureka No. 25 mine of the Berwind-White Coal Mining Co., at Windber, Pa., where the reservoir lies in the major axis of the Wilmore basin and has an area of eight to ten acres. Water flows to it from mines Nos. 35, 36, 37, 40 and 42.

This company pumped 111,000,000 gallons of water in December of 1921, about 3,600,000 gallons per day. As the sump fills in two days, the capacity is twice that of the daily accumulation, or 7,200,000 gallons. The pump-room is equipped with three 4,000-gallon centrifugal pumps which lift against a 330-ft. head in an 18-in. main and are driven by 500-hp. induction motors. Only two of these units are operated on any one night and consequently it takes from eight to nine hours to empty the sump.

In the early days of steam as a direct agent of power at the mine the men behind the shovels in the boiler room were the instruments by which the consumption of power was measured. If the steam failed to do what was required of it, the firemen were supposed to be flagging on the job or stoking badly. Sometimes the firemen by a burst of energy could carry the load over its peaks, but often the pumping load was so heavy that the other loads had to be reduced to permit the pumps to run.

Now, the load is more accurately ascertained. When men begin to measure and record, then comes regulation. As soon as a co-operating factor like the power station comes into the business, an attempt to place responsibility results in better performance, and both parties endeavor to arrange that mutual accommodation shall be rewarded by mutual advantage. Thus arises the lowered rate for off-peak service, which is a concession of the power corporation of which the frugal operator should take full advantage.

Strange to say, many operators for many long years perseveringly pumped water during busy hours because they lacked storage capacity that would enable them to do otherwise. They did not realize the loss because they had no figures to show them what they were losing. Now that power is purchased the doubt as to the loss is gone. The facts can be no longer hidden and the change is almost automatic.

With continuous pumping the pumps need continuous superintendence. When all the work is done in a short portion of the day the wage charge is reduced from one-third to one-half. Furthermore, where the water flowing to the sump contains suspended matter the large sump provides a chance for the silt to settle, thus saving the impeller and the case of centrifugal pumps from wear and possible clogging and the cylinders and plungers of reciprocating pumps from abrasion. Moreover, with clear water the valves of these pumps will function without interruption.

FREQUENT AND WIDESPREAD REPORTS of wage increases in industry have marked the past three months. These increases have come mainly in the textile, clothing and steel industries. When considering these upward changes in wage rates it is well to have in mind that they are taking place in industries in which wages were deflated in 1921 and that the wage levels after these present increases are even yet generally below the peak of war and post-war scales. The recent advance of 12½ per cent by the Amoskeag Mills, for instance, leaves wages 2 per cent below the war peak, it is stated.

In the coal industry, on the other hand, union wages have not receded from the post-war peak, which is well above the war-time levels. In other words, wages that were lowered during the slump of 1921 are now coming back as industry gains in activity. A shortage of labor is reported more or less generally over the country, save in the soft-coal industry. There is, in consequence, a distinct trend toward the further development of mechanical aids to production to offset high labor costs and labor shortage. This is true also in coal mining, where there is now under way intensive development of mechanical loading machinery and of other devices for increasing output per man and for lowering the labor cost in producing coal.

SOUTH AFRICA'S COAL IS MORE VALUABLE THAN ITS DIAMONDS judging by the report of the government mining engineer for the first eleven months of 1922. The output of the Union of South Africa for that period was 8,907,576 tons valued at £3,196,037, whereas the diamond output for the same period brought only £1,995,513. Now that coal shipments are starting from South Africa for a long haul across the equator to Germany, the coal production of the tip end of the black continent attains a little worldwide attention. At the twenty-second geological conference held in Canada it was estimated that the South African coal deposits totaled about fifty billion tons.

THE CHIEF TROUBLE with the country just as present seems to be too many authorities and not enough authority. —*Baltimore Sun.*

FRANCE CONTROLS THE PITHEADS. It remains to be seen whether she can control the square heads.—*Norfolk Virginian-Pilot.*

Large Sump and Night Pumping Lower Peak Load When Electric Power Displaces Steam at Isabella

Reservoir Holds More Than a Million Gallons—Sump Near Shaft Sealed with Gunite—Stoppings, Dams and Buried Pipe Mains Keep Water from Tracks —High-Voltage Dangers Underground Reduced by Suitable Construction

BY ALPHONSE F. BROSKY*
Pittsburgh, Pa.

DURING the shutdown of 1922 the Hecla Coal & Coke Co., a subsidiary of the Hillman Coal & Coke Co., made many improvements to the Isabella mine, at Isabella, Pa. This mine has two hoisting shafts both of which are located a short distance from the bank of the Monongahela River. Among the improvements that should be mentioned were the substitution for steam-driven machinery, of electrical equipment operated by purchased power. At the same time a large underground sump was constructed under unusual difficulties near these two shafts. This was done mainly for the purpose of permitting the pumping of water during the night and thus reducing the peak load to a level which would not draw a penalty.

In order to familiarize himself with the location, elevations and other details of the sump the reader should study Fig. 1, which shows a section of the mine layout. From No. 2 shaft, up which the water is pumped, the sump system runs northeastward in a return airway, known as No. 2 aircourse, for a distance of about 725 ft. it then crosses the main entries to the west by a passageway driven expressly for that purpose, and occupies a portion of No. 1 return airway and the first two sets of the butt headings driven to the west. All the sumpage is in roadways or airways, except where connecting waterways have been constructed. No rooms are available for the storage of water.

SUMP WILL TAKE WATER FROM TWO MINES

For the purpose of hauling coal from Tower Hill Mine No. 2 to the river for shipment by water that operation which is owned by another subsidiary of the Hillman Coal & Coke Co., is connected underground with the Isabella Mine. In order to provide for this additional tonnage whenever it is decided to raise it in the manner indicated the mine is furnished with two hoisting shafts. The water already is handled from the one mine, consequently the sump must be large enough to hold the water from both mines, that from the Tower Hill No. 2 Mine being pumped to the sump.

Though it is estimated to hold at least 1,000,000 gallons the exact capacity of the sump has not been determined. It is so large, however, that it is expected that it will hold all the water likely to accumulate over a period of not less than 72 hours. The superintendent tells me, however, that from his knowledge of this mine he doubts whether the stage will rise above 654 ft., which is 2 ft. below the flood stage for which provision has been made.

Because the elevations of the bottom in the vicinity of the shafts are such as to facilitate the construction of a sump with a minimum of excavation, a new pumproom was built at *A*, in a breakthrough driven from No. 2 aircourse to No. 1 shaft. As the distance to No. 2 shaft is short, the water readily could be discharged through the upcast compartment of that shaft, and as this compartment is an upcast all danger of freezing was removed. Consequently no borehole had to be drilled to the surface. But to drain all the water in the sump to a suction well at the pumproom, the underclay had to be lifted on No. 2 aircourse, as reference to the elevations of the bottom will make apparent. The bottom of the aircourse before excavation was at an elevation of 660 ft. near No. 2 shaft and only 654 ft. at the breakthrough where the system crosses to the west.

Again referring to the elevation of the bottom in the vicinity of this crossover point, it will be noted that a natural shallow basin lay there, and it was to this basin,

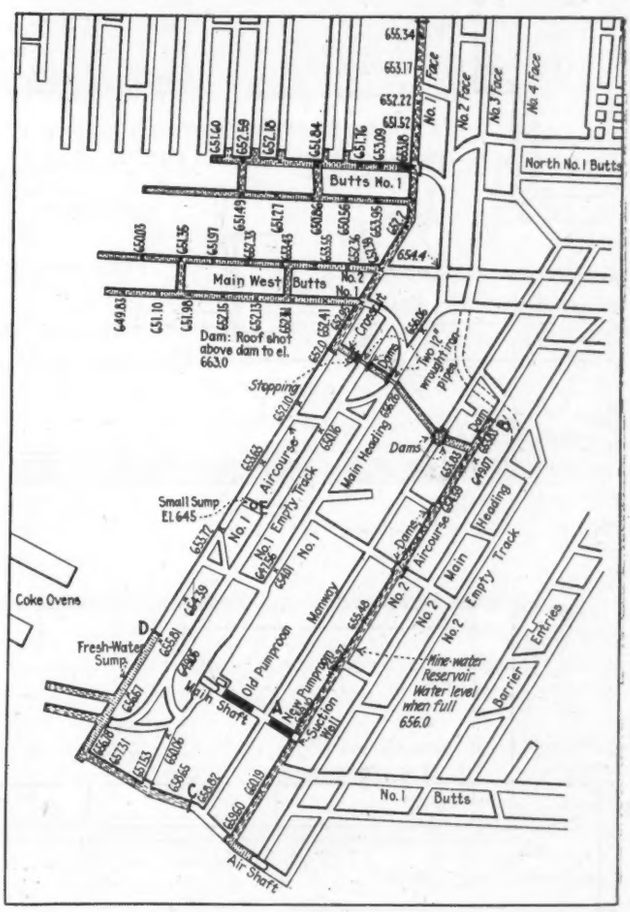


FIG. 1—EXTENSIVE SUMP AT ISABELLA SHAFT

In order to get space for the storage of water without weakening the pillars around the shaft an excavation was made along No. 2 air course and provision was made to store water on roadways a long way from the shaft. The sump had to cross a manway and two haulways. In order to protect the shaft further the excavation was gunited.

*Assistant editor, *Coal Age*.

before the present sump was constructed, that the suction line extended, coming from the old pumproom adjoining No. 1 shaft which housed the steam-driven pumps. This basin was so small that only by keeping these units in continuous operation could the main bottoms be kept free of water. In order that the space may be utilized as a waiting room the steam equipment will be removed from the old pumproom.

By taking up bottom to an elevation of 651 ft. in No. 2 aircourse, the management calculated that, what with the storage afforded by the butt headings to the west, the sump system would be adequately large. Accordingly the bottom was lifted beginning at *B*. After excavating to an elevation of 651 ft. a soft bed of clay was encountered which dipped slightly toward No. 2 shaft, greatly facilitating the work. The cut increased from a depth of 3 ft. at *B* to a depth of 10 ft. near No. 2 shaft, where the bottom level of the ditch is about 650 ft. Thus the bottom of the sump sloped gently southward toward the shaft.

Holes for blasting were drilled horizontally by an electric drill in the soft bed of clay, giving a more effective lift to the shots. Above this soft material were shale and hard clay which could not be penetrated as readily by holes drilled in a vertical plane. The saving in drilling and blasting and the added storage space warranted the additional mucking caused by reason of a larger cut.

Fear was entertained that the clay might cut under the coal and so weaken the pillars on which No. 2 shaft and its bottom relied for protection. It was feared also that the shaft might settle as a result of the softening of the clay by water. Consequently gunite was placed on the exposed surfaces below the coal, thus sealing the water in the sump from all the clay surfaces along the entire main sump heading. Altogether 1,944 sq.yd. of gunite was applied to a thickness of 1 to 1½ in. and at a cost of $1.03 per square yard. Only in a few spots was it necessary to use a wire mesh for reinforcement. Where the main sump heading is deepest ¾-in. weep pipes were used to let in from behind the gunite facing whatever water could not be conveniently shut out.

So far the work has shown no signs of failing in the year that has elapsed since its completion. It might well have been feared that squeezes, no matter how inoffensive, would result either from the swelling of the clay or the squeezing of the strata consequent on mining and that these might displace the gunite, but appar-

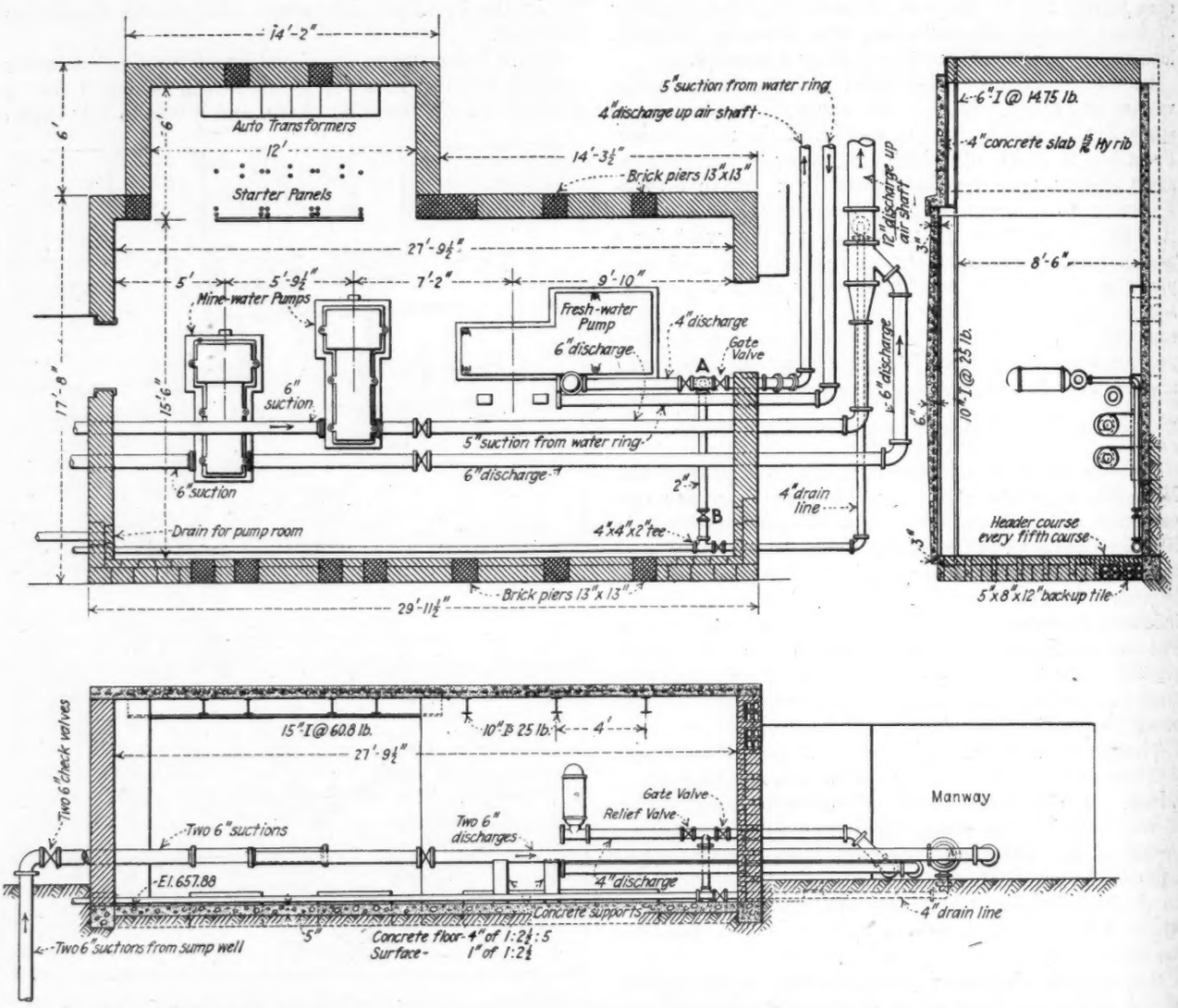


FIG. 2—PUMPROOM AND PUMP CONNECTIONS WITH PROVISIONS FOR PRIMING

In laying the foundations excavations were made to rock that might be expected to remain unaffected by the softening action of water and air. Underground, the foundation material may not have been subjected to such weathering actions and the present condition of a foundation bed may be not a correct index to its future condition as is the case with surface materials. The floor in this pumproom has been made part of the foundations. From this pumproom is discharged both dirty mine water and clean water, from the water ring, that water being stored in a separate sump located not far from the foot of the shaft.

ently the swelling action was wholly eliminated by the way the water was sealed off from the clay. As for the imperceptible squeezes resulting from the weight of the strata the panels of gunite possess sufficient flexibility as cantilevers to withstand the thrusts normal to them; or, if that is necessary, they can be given greater strength by the use of a reinforcing mesh. The success achieved on this job moved the Snowdon Coke Co. to gunite a sump in a near-by mine which holds 500,000 gallons of water.

To carry the sump system, which lies in the path of the return air, across the haulageways and fresh-air entries it was necessary to erect many brick stoppings and concrete dams. These dams rise to an elevation of 656 ft., or 1 ft. above the maximum water stage. Water which collects in the sump headings to the west is carried across the manway on the No. 2 side and across the two haulageways on the No. 1 side by sets of two 12-in. wrought-iron pipes which are buried beneath the entries they cross and beneath the stoppings that were erected to prevent the air from wandering from its determined course. These pipes are buried several feet below the entries, which provision, together with the tight stoppings, prevents the air in one entry from short-circuiting into another in which the air is traveling in the opposite direction.

No. 1 aircourse and the butt headings turned west, which form part of the sump system, required little conditioning. Dams had to be erected, however, and the roof had to be shot where these dams were located, so as not to restrict the airway. The bottom, also, had to be given a general cleaning. The bottom was taken up at a few points to establish the mean elevation at about 652 ft. Thus this area will hold a runoff to a depth of about 3 ft. whenever a maximum stage is reached, and consequently more than two-thirds of the entire storage capacity is developed here.

Fresh-Water Sump Holds Water for Town

As might be expected, the strata near the river discharge into the rings of the No. 2 shaft a moderate quantity of water, so pure indeed as to be suitable for town use. This water is piped to a fresh-water sump lying between dams *C* and *D* (see Fig. 1). The overflow from this fresh-water sump falls from the dam at *C* into the mine-water sump, which lies at a lower level.

Some people might look askance at supplying water from an underground source for town use, but under conditions such as exist here there is little to fear. Inasmuch as the fresh-water sump seals off that which might be strictly termed mine water and as the undesirable acids and salts in the wetted sides of the sump have long been removed by solution, the fresh water coming from the shaft rings and stored in this sump is the equal of any spring water in the region. As an added precaution it occasionally is treated with lime.

Thus is care taken of practically all the water in the Isabella and the Tower Hill No. 2 mines, though, of course, small pumps have to be used for gathering. Mine water from the main bottom in the vicinity of No. 2 shaft drains directly to the big sump. Water which gathers in the sump of No. 1 shaft, that which finds its way to a small sump at *E* and that which collects in a swag on No. 1 empty track are pumped to the big sump by a 6x8-in. piston pump which is driven by a direct-current motor. This unit is housed in the old pumproom adjoining No. 1 shaft.

The walls of the new pumproom are 13 in. thick and consist of brick and back-up tile. However, where the wall has to support crossbeams, solid brick pillars 13 in. square are erected in the walls. These crossbeams are 10 in. high and of I cross-section where they span the main building but only 6 in. where they cover a side extension of the pumproom. To support the 10- and 6-in. beams where the extension breaks the continuity of the wall, a 15-in. beam is laid across the pillars. The solid brick piers have been introduced into the body of the wall so as to give adequate support to this roof system.

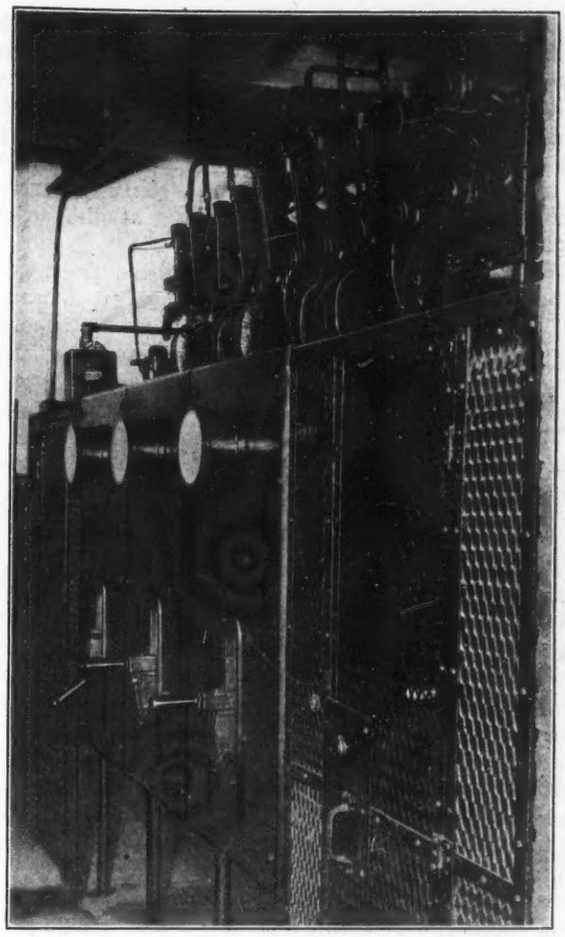


FIG. 3—STARTER PANEL FOR MINE PUMPS

A cable carrying a 2,300-volt current is brought through the wall behind the board to disconnecting switches and thence through oil starting switches to the motors. Nothing over 110 volts makes direct connection with the switchboard, the frame of which is grounded so as to afford the operative a further safeguard against shock.

The details of the design can be seen in Fig. 2. Entrance is gained to the interior through a door made of ⅛-in. steel plate reinforced by riveted angles and channels. The pump foundations are carried to a solid footing by concrete piers and the floor is made part of these foundations.

The roof slab is of concrete reinforced with expanded metal and varies in thickness from 3 to 6 in. The upper flange of the 15-in. beam already mentioned, which otherwise would be subject to corrosion because of its inaccessibility for painting, is enveloped in concrete. This practice should be adopted in all work where steel and concrete are employed in the manner described. All other steel beams lie below the roof slab where they are accessible for painting and sheltered from roof water.

Mine water is pumped from the big sump up No. 2

airshaft against a head of 138 ft. by two 750-gallon single-stage centrifugal pumps driven by 60-hp. squirrel-cage motors. The 6-in. discharge lines from these two units connect by means of a Y to a 12-in. line which is located in the shaft. The 6-in. suction lines from the centrifugal pumps are provided with check valves as indicated in Fig. 2 and lead to a 10x12-ft. concrete suction well 8 ft. deep in the main sump heading adjoining the new pumproom.

Water for town use coming from the fresh-water sump is pumped up the same shaft against a head of 403 ft. to a reservoir tank on a hill by a 150-gallon plunger-type triplex pump which is driven by a 50-hp. squirrel-cage motor. This pump has a 5-in. suction which taps the little sump through the dam at *C*, and a 4-in. discharge which is carried to the reservoir. To supply the needs of the town it must be kept in operation about 16 hours per day.

Only Pump During Off-Peak Hours of Night

The pumping of mine water is done during the off-peak hours of the night. At the present time from 300,000 to 400,000 gallons of water accumulates in the big sump each day. This quantity can be pumped by one of the two units in a single shift. The two centrifugal pumps are put in operation on alternate nights. Consequently the sump capacity is three times that of the daily accumulation of water, which in turn is one-half the 8-hour capacity of the two centrifugal pumps. Thus ample provision has been made for any increase in the quantity of water that may have to be pumped at any time.

Auxiliary tap lines have been provided whereby the 4-in. discharge column from the triplex pump or the 12-in. discharge column from the centrifugal pumps may be drained back to the big sump. Through the same drain line by a manipulation of valves the centrifugal pumps may be primed from the triplex pump.

A 4-in. drain line connects the 12-in. discharge of the centrifugal pumps with the big sump. A 2-in. line connects this drain line with the discharge of the triplex pump as shown in Fig. 2. Thus by opening the proper valves either water column in the airshaft may be drained.

As before mentioned, the water head on the triplex pump is 403 ft., and against this the pump cannot start. By opening a check valve *B* on the 2-in. line it is enabled to pick up water against practically no head. Then a gate valve at *A* is opened, after which the check valve is closed, thus allowing the triplex pump to take up its load gradually against the large head.

Safeguarding the High-Voltage Lines

Alternating current at a potential of 2,300 volts is conducted from the substation on the surface to the underground pumproom by a No. 1 3-conductor lead-armored cable which is strung down the No. 1 shaft in fresh air, and leads to the rear of the switchboard. The incoming line at 2,300 volts passes through disconnecting switches and oil switches for starting and thence leads to the motors. Direct connections are made from the oil switches behind the main panel to the motors by wires carried in conduits under the floor.

By bringing the control panel flush with the side-wall of the pumproom, locating all control apparatus in an offset, keeping the high voltage behind the starting panel and under the floor in conduits, the dangers involved in handling heavy voltages in close quarters are eliminated. The starting panel is equipped with three hand-operated starters and three voltmeters which latter are tied in with the high-voltage equipment by a current stepped down to 110 volts. These features are to be recommended for all underground pumprooms where alternating current is used.

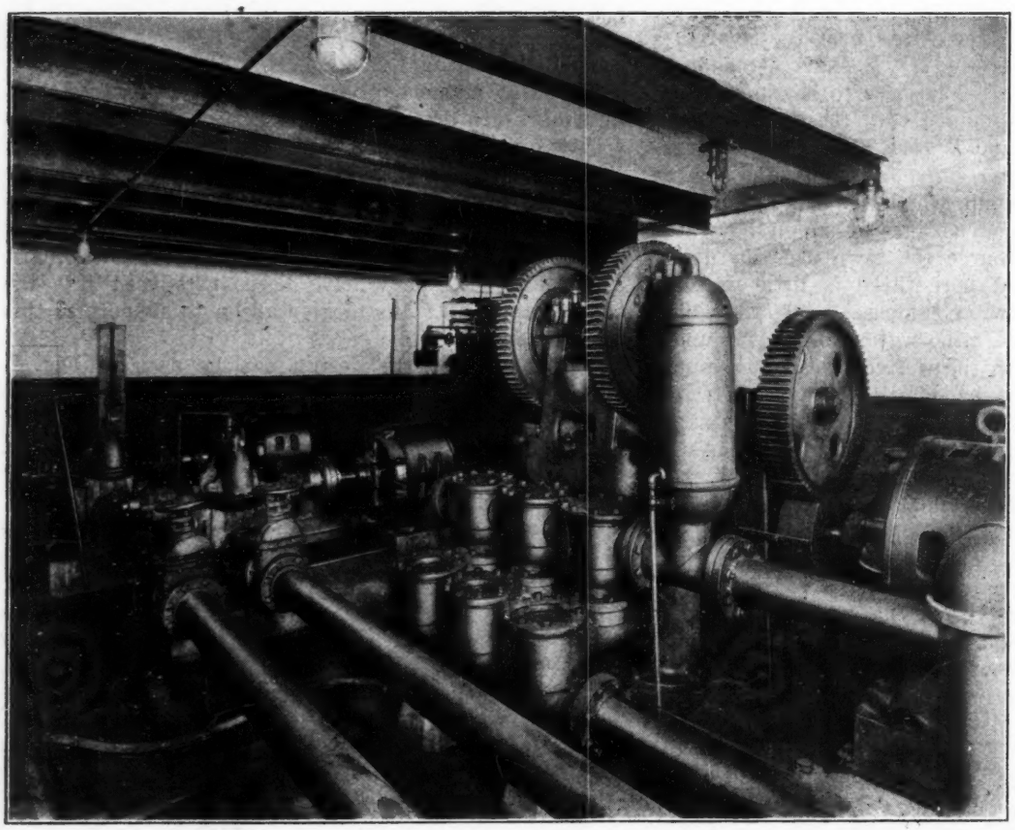


FIG. 4

Pumproom, Isabella Mine

Mine water is pumped by one of the two 750-gal. single stage centrifugal pumps driven by 60-hp. squirrel-cage motors which can be seen in the rear and on the left. The large pump on the right is a 150-gal. plunger type triplex pump for pumping fresh water. This is driven by a 50-hp. squirrel-cage motor, the lift being 403 ft. as against 138 ft. which is the lift of the other pumps. The starter panel can be seen to the left and behind the triplex pumps.

Gathering Without Animals, Locomotives or Conveyors

Longwall Retreating by Panels with Cars Placed Continuously Before Face by Portable Electric Hoists and Assembled in the Same Manner When Loaded—Every Locomotive Hauls Full Trips Exclusively

BY F. C. CORNET*
New York City

THE mining method shown in the illustration accompanying this article and explained hereinafter applies to seams of such thickness that cars can be loaded at the working face without excavation in either the top or the floor.

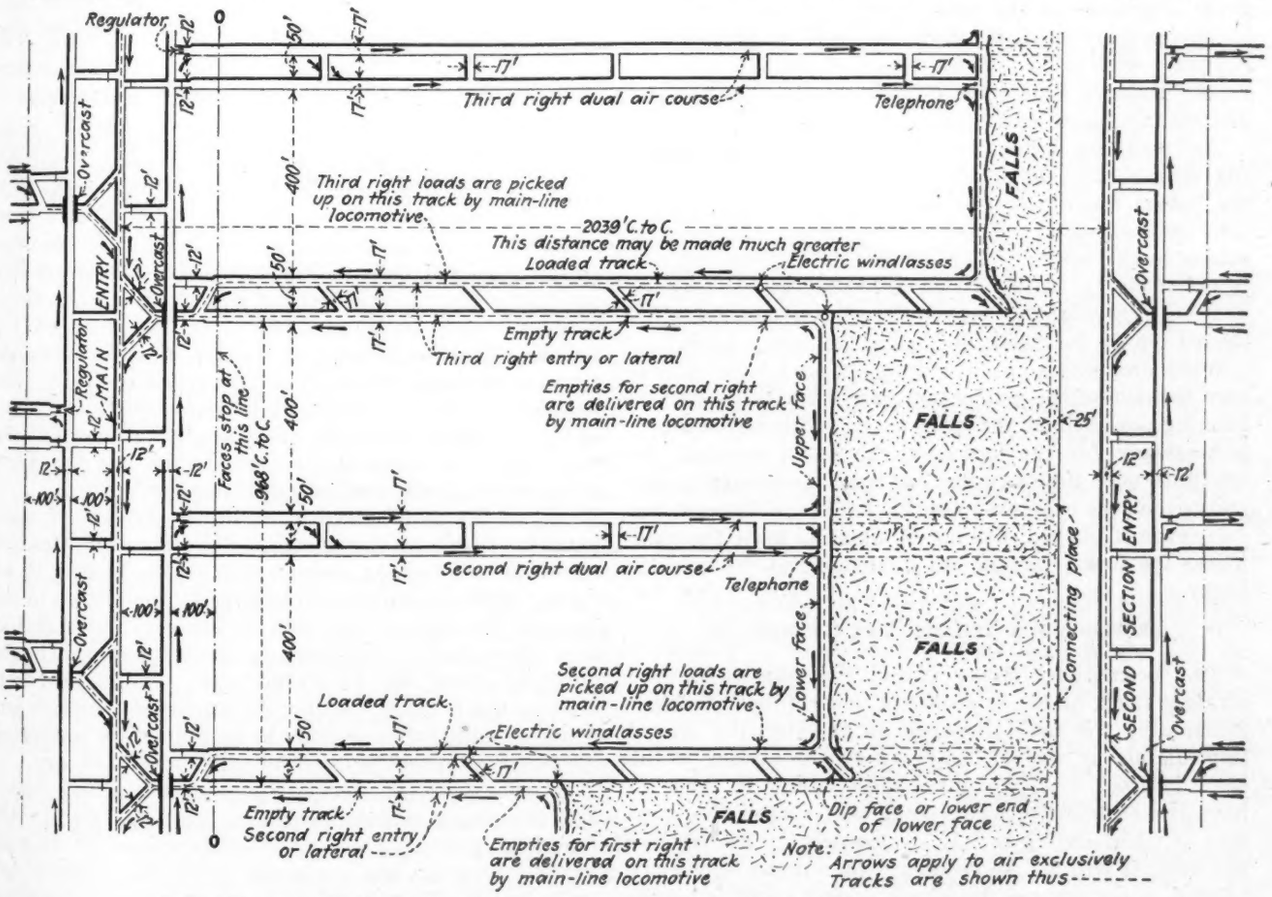
The main-entry system shown to the left of the illustration, which consists of a haulageway flanked on either side by a so-called main aircourse, is driven on the full pitch of the coal, which, it is assumed, does not exceed 4 per cent. At intervals of nearly 1,000 ft. center to center, lateral headings (hereinafter called "laterals" for brevity's sake) are driven two abreast at right angles with the main entry, that is, on the strike of the seam. For brevity also the lower member of a lateral will hereafter be called the "empty track" and the upper member will be designated as the "loaded track."

Halfway between two successive laterals a so-called "dual aircourse" is driven parallel with the laterals. Between any dual aircourse and the nearest lateral, above and below, a solid 400-ft. pillar is left to be mined retreating after at least two successive laterals and the intervening dual aircourse have been driven to their assigned limit.

The fact that these solid 400-ft. pillars constitute for the laterals and the dual aircourse an effective protection that will last as long as these places are used makes it permissible to drive them of such a width that they can be extended without payment for yardage. I have assumed that a width of 17 ft., as shown on the drawing, would put these places out of the yardage-paying class, leaving in the narrow class, subject to yardage, only the main-entries and the short necks by which the main haulageway and the aircourses are connected with the laterals and dual aircourses respectively.

When two successive laterals and the intervening

*Consulting engineer.


Regulator
Third right dual air course
Telephone
Overcast
ENTRY
MAIN
Third right loads are picked up on this track by main-line locomotive
2039' C. to C.
This distance may be made much greater
Loaded track
Electric windlasses
Empty track
Third right entry or lateral
Empties for second right are delivered on this track by main-line locomotive
Upper face
FALLS
Faces stop at this line
968' C. to C.
Second right dual air course
Telephone
Lower face
Connecting place
SECTION
SECOND
Second right loads are picked up on this track by main-line locomotive
Loaded track
Electric windlasses
Empty track
Second right entry or lateral
Empties for first right are delivered on this track by main-line locomotive
Dip face or lower end of lower face
Note: Arrows apply to air exclusively
Tracks are shown thus

METHOD OF MINING ELIMINATING USE OF LOCOMOTIVE EXCEPT FOR FULL-CAR TRIPS

The locomotives in the scheme planned keep continuously traveling, loaded always to their capacity except when driving what the author calls the laterals and the air courses. The air currents cannot leak from intake to return, as a 400-ft. pillar unbroken by crosscuts separates them during the real operating stages. The cars, drawn to the highest point of the face by an electric windlass, can be lowered to any point at the face desired. Electric windlasses assemble the cars and the locomotives pull them out. The cutters have straight cutting without traveling from face to face. Absolutely nothing spoils this picture except the requirement of an even, favorable grade, which in many places can be conceded, and the need for a suitable roof or height of cover. As hand loading is provided the area to be supported back of the face is a minimum.

dual aircourse have reached the limit assigned to them, their ends are connected up, as shown, by a wide place simultaneously driven from the dual aircourse toward both laterals and from each of the latter toward the dual aircourse. The outby rib of this connecting place forms a longwall face intended to be driven toward the main entry until it reaches the line *OO* drawn parallel with the main entry sufficiently far from the near main aircourse to protect the latter by an adequate barrier pillar that will not be mined until the time when the main-entry pillars are themselves drawn.

A look at the drawing shows that when a newly formed longwall face starts driving, it is perfectly straight from end to end, including that lowermost part of it marked "dip face" on the drawing. As the longwall face drives on, however, the direction of the dip face is gradually changed to a slant, as shown. The reason for this will appear below.

As to the main part of the face, it will be maintained straight on the full rise of the seam, as shown. This part of the face I have divided arbitrarily into two sections, marked "upper face" and "lower face" on the drawing, the supposed dividing line between the two being opposite the lower member of the dual aircourse, near the telephone. The reason for my making this imaginary division will appear later.

No Bonding Needed Along Longwall Face

The illustration plainly shows in broken lines the great simplicity of the whole track system. If trolley locomotives are used, all the tracks will be bonded and equipped with trolley wires, except along the longwall faces. As will appear later, no gathering locomotives and no animals will be used.

The main-line locomotive, coming up the main heading with a full trip of empties, keeps on its way past the lateral for which it is bound, until the last car of the trip has cleared the point of the upper switch giving access to the lateral. The whole trip is then dropped into the empty track of that roadway, which, as may be seen, is straight. The empties thus dropped are intended for the longwall face below the empty track.

When dropping a trip of empties into a lateral, advantage is taken of the momentum gained by the cars while running downhill on the main entry. This will make it unnecessary for the locomotive to begin pushing the trip until such time as every car is on the straight track and beyond the overcast. On this long track tangent the cars, even if pushed, will not be likely to leave the rails unless the former are in bad condition and the track is shaky.

Provision for Turning the Locomotive

The locomotive, having placed the empties on the straight track as far as required, will run back the way it came to the main heading, to re-enter the lateral immediately by way of the lower switch leading to the same lateral. This maneuver is necessary in order to have the locomotive, when going out, turned the same way as when coming in. If storage-battery locomotives are used, it will not be necessary to run the locomotive around in the manner described. After re-entering the lateral, the locomotive will switch to the loaded track, where a full trip of loads is standing already made up, waiting to be hauled away. These are the cars that have been loaded at the longwall face above the loaded track.

At some convenient point along each empty track an electric windlass is placed, the steel rope from which reaches outward as far as the outby end of the trips of empties delivered by the locomotive. Although I have shown this windlass placed where the empty car curves toward the face, another location along the empty track might equally well answer the purpose, which is to move the empties from the point where the locomotive has left them to a point at or near the head of the longwall face where they can be allowed to run by gravity down the loading track along the face until stopped by their brakes at the point where they are needed. The cars thus will be brought to loading positions, not one or two at a time but in groups of fifteen or twenty-five, or even more units, as the face foreman may think best. The grade being in favor of the movement of the cars it is easy to spot them at any point desired.

At some appropriate point along each loaded track, not necessarily where shown on the drawing, is also placed an electric windlass, the steel rope of which reaches as far inward as the foot of the dip face. It is by means of this windlass and rope that the cars, dropped by gravity from the main face after loading, as well as the loads drawn away from the dip face, will be made into full trips all coupled up, ready to be hauled away by the locomotive, as previously explained.. Although windlasses answering perfectly the comparatively limited requirements of these operations are machines that may be rapidly and inexpensively moved from one location to another, it will be best so to place them that they will have to be moved only at long intervals, say 200 or 300 ft. at a time.

Locomotive Invariably Handles A Full Trip

The grades, where grades there are, being in favor of the loads, the number of empties that the locomotives can conservatively haul up the controlling grade will determine the number of cars constituting what I have repeatedly designated above as a full trip. Fifteen-ton locomotives will haul with comparative ease forty-five ordinary empty 2-ton cars up a 4-per cent incline, which is the maximum grade assumed at the beginning of this article. The face lengths and other measurements appearing on the drawing permit the placing of forty-five empties and the formation of trains of forty-five loads in the laterals at all stages of the operations down to the time when the longwall faces get to the line *OO* when the laterals, being worked out, are abandoned.

All conditions required to minimize the cost of main haulage are met by this system: First, single destination on every trip made; second, full trains hauled at all times; third, no shifting to be done by the motors in the laterals; fourth, no reduction in the length of trains at any stage of the operations, no matter how nearly the territory saved may be worked out. The gathering is done at much lower cost by the combined windlass and gravity method than it could be by animals or gathering locomotives under the most favorable circumstances.

In ordinary mine layouts, the lateral headings generally are short, seldom exceeding 1,500 ft., due to the fact that gathering by either locomotives or animals rapidly becomes too expensive when the laterals are made longer. This drawback is entirely eliminated when the work is done in the manner just explained. The cost of gathering remains at the same low figure no matter how long the laterals may be. Longer laterals mean less section headings of the kind shown at the right of the drawing. They also mean less trackage and fewer

overcasts, as well as more efficient supervision and increased safety.

I realize that some engineers will object to long laterals, on the ground that, in the system I am describing, intensive, paying production is delayed until two consecutive laterals have been driven to their limit and connected up at their ends. Of course, the execution of such preliminary work will absorb more time than certain operators can, or are willing to, afford before getting tangible returns from the money spent in development work.

I freely admit that this new mining method is designed only for those operators who have at their disposal capital that will permit them to wait reasonably long for returns, provided that by so doing the dividends earned will be larger than they could possibly be through any other method. The large coal area tributary to a lateral is in itself a factor that will amply repay the operator for the time spent in driving these long roadways.

Assuming the layout to accord with the figures appearing in the illustration, ninety men could, without interfering with one another, work together along the 900-ft. face. When pressed for coal, 120 men could work there without appreciable decrease of individual output. Supposing, as already seen above, the imaginary dividing line between the upper and lower faces to be at the lower member of the dual air course, as many men could work above as below said imaginary dividing line—that is, sixty on each side of it. The mining law of West Virginia, which I had in mind when designing this method, limits to sixty the number of men who may be employed on a single split of air, no matter how far apart consecutive laterals may be. That is why the aircourse is placed between the laterals. By placing it exactly halfway between the two, the permissible maximum number of miners may be employed on either side without crowding them more on one side than on the other.

Ventilation Simply Arranged and Effective

The ventilation system requires only one regulator. It makes no difference in which member the regulator is built, provided the other member is blinded, as shown, by a stopping in order to confine regulation to one point only. This stopping is the only one necessary in connection with the dual aircourse, both members of which, combined, offer an easy passage for the air. None of this ventilating current can possibly be lost, as it has no way to reach the returns except through the workings to be ventilated. In no other system is all waste of air thus made impossible in working headings.

Another objection that may be raised against long laterals is that the maintenance of such arteries grows more expensive as they get older. Of course, the longer a lateral, the longer it will have to be kept in service and maintained in more or less perfect condition. The above objection is justified in ordinary practice where the driving of contiguous rooms to one side (and sometimes to both sides) of the lateral generally so weakens the overlying strata that maintenance of said lateral becomes expensive. This, however, is not likely to happen where the overlying strata remain supported to the last by solid 400-ft. pillars, as is the case with the layout represented by the drawing.

Let us assume that the seam worked has an average thickness of 54 in. of merchantable coal and ninety loaders are employed. which would allow each man 10 lin.ft. of face. A cut 10 ft. deep will throw 16 gross tons of coal per 10-ft. section. This is just what the average loading capacity would be among so many men working together shoveling coal into 2-ton cars standing 32 in. high above the rail.

We have seen that the locomotives would deliver the empties near the top of the workings in 45-car trips. The forty-five cars, dropped together or in two or three sections rapidly following each other, would allow every two loaders one car from each trip. Each pair of men would require sixteen cars and the ninety men 720 cars daily, which makes it necessary for the locomotives to make sixteen trips to and from each lateral in the course of an 8-hour shift. Assuming there are twice as many cars, empty and loaded, on the roads going and coming, or standing at the tipple and on storage tracks as there are at the different faces, every car in actual service will make 5.33 trips every working day, a performance unheard of in room-and-pillar mines, but just fairly satisfactory in well-planned longwall mines where the tracks are good, the ventilation abundant and the locomotives not lacking.

Chain machines of the ordinary room-and-pillar type, cutting 10 ft. deep, could be applied easily to such work as I am describing. With the difference that there is no sumping to be done, these machines would work just as they do in rooms, cutting across a 900-ft. face instead of one of 25 or 35 ft. Using two cutters simultaneously, both traveling downhill, for example, the upper machine starting at the empty track, the lower one at the lower member of the dual aircourse, the cutters could be depended upon to travel at the rate of a foot a minute, taking into account the time necessary to change all the bits of each machine twice. Thus the cutting of the whole face would be done easily in the course of an 8-hour shift or, to be exact, in 7½ hr. This performance of 450 lin.ft. a day, while not extraordinary in longwall practice, is 100 per cent better than in room-and-pillar work, where a chain machine is considered to be doing very well if it cuts ten 22-ft. places daily.

The chain cutter, perhaps the most remarkable instrument of production that the mechanical genius of this country has put at the disposal of coal operators, also is the one to which our mining methods have been slowest in adapting themselves.

What I said in my article in *Coal Age* of Jan. 25, 1923, concerning timbering and conveyor shifting applies in a general way to the method described above, the only exception being that in this case there is a track to be shifted instead of a conveyor. One job is about the same as the other.

Wagon Mine Operated by ¾-Yard Shovel Is an Alabama Innovation

ONLY a quarter mile from the Pocahontas station of the St. Louis & San Francisco R.R., the Pocahontas Coal & Mining Co., of Carbon Hill, Walker County, Ala., is nevertheless temporarily running a stripping as a wagon mine. Excavation just now is being made in the shallower stripping, which averages about 14 ft., and the work is done by a Bucyrus extra-high-lift shovel with a ¾-yd. dipper, a 22-ft. 6-in. boom and a 17-ft. dipper handle, the shovel being mounted on caterpillars. The coal is 28 in. thick and is covered by a 4-ft. bed of blue slate which can be removed without blasting. The shovel makes a 25-ft. cut, casting the overburden over into the previous excavation. The stripping is all done at night, and the shovel during the day loads coal into wagons along the bank.

Storing and Reclaiming Coal by Portable Conveyors Under Difficult Conditions

By D. A. Thomas*
Birmingham, Ala.

A LONG-TERM contract for convict labor made it necessary for the Montevallo Mining Co. to keep on mining coal when there was practically no demand for it. This made it necessary to store about 10,000 tons of small-size coal, and it was soon apparent that this coal could not be handled without machinery. Consequently three portable belt conveyors manufactured by the Barber-Greene Co., of Aurora, Ill., were installed in September, 1921, one being 60 ft. long and the other two 30 ft. Two were equipped with 5-hp. motors and one with a motor of 3 hp. All the belts were 16 in. wide.

Before the conveyors were installed some of the coal was unloaded from the cars to piles by shovels. After the conveyors were installed a section was cut underneath the track and a sheet-steel hopper built. Two men push the coal from the cars into the hopper, from which it is carried by the conveyors to the storage pile, which sometimes reaches a height of 27 ft. At times all three conveyors are used in series, sometimes only one and sometimes two. When piles 27 ft. high are made the 60-ft. conveyor is used on the far end of the line of three conveyors. With all three in series 50 tons of coal could be handled per hour, using seven men, but our average speed for all work was near 25 tons per hour. Approximately 150 tons could be unloaded per day and about 300 tons could be loaded back into the cars.

In less than four months 5,000 tons was loaded and 4,500 unloaded. The work was rendered particularly difficult by the contour of the ground, the railroad being 15 ft. above the storage yard. With three conveyors in series it was possible to pile the coal so far from the track that a large quantity of it could be stored and to do it in piles containing three different sizes: domestic nut, chestnut and slack. The work is, of course, irregular.

Three Conveyors Shift Coal Around Corners

In figuring operating costs the three conveyors are considered as a unit, because their chief use is in series. It is estimated that they are good for at least ten years of life and that repairs and maintenance should not exceed $120 a year. The labor for loading 5,000 tons is figured at 8c. a ton and for unloading 4,500 tons at 5c. a ton. The total operating cost for the four months is $858.80, or 9.04c. per ton.

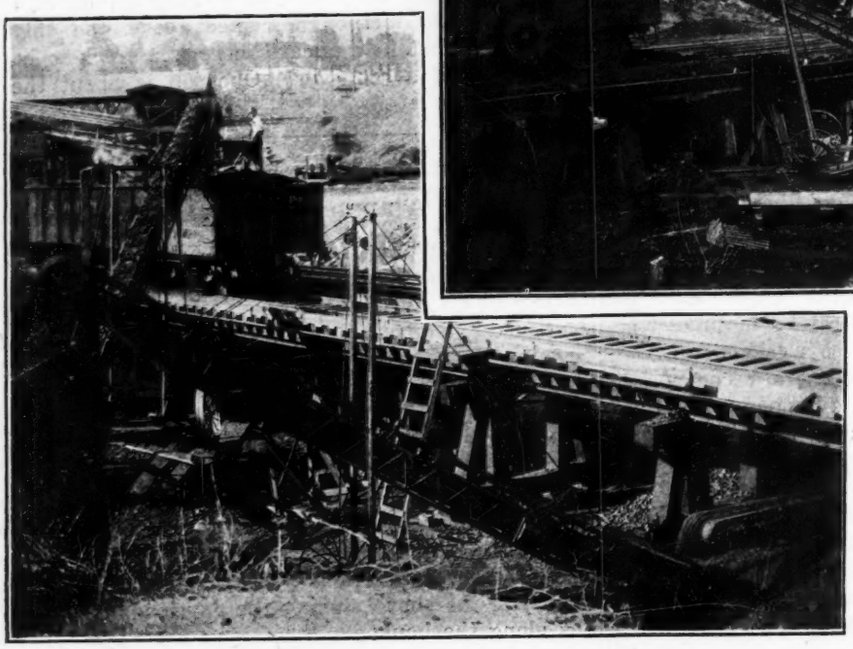
If this work had been done by hand it would have cost at least 25c. a ton on account of the difficulties arising from the unfavorable contour of the ground. This would make a total cost of $2,375; so the machines saved $1,516.20 in four months. This, which is at the rate of $4,528.60 a year, is equivalent to a return of 152 per cent on the investment. The saving per ton is 15.96c. A summary of these costs is given in the table herewith.

A further saving is effected because there is less breakage of the domestic-nut size when handled by the conveyors than when shoveled by hand. About

*Formerly vice-president, Montevallo Mining Co.

Loading Out Coal

In foreground 60-ft. portable conveyor which is fed by a 30-ft. conveyor which is itself fed by another 30-ft. conveyor passing under the trestle. Note also in the foreground the handy method of suspension and transportation of the conveyor.



As Seen from Another Angle

The slats on the conveyor belt by which the railroad car is being loaded are plainly visible. Few conditions for a storage yard are as unfavorable as at this mine, the coal having to be lifted from the ground to the top of a car that is perched on a 15-ft. trestle.

3,500 tons of this size was stored in the four months, and I should estimate that the reduction in breakage was 3 per cent, or 105 tons. Breakage reduces the value of the coal from $3.50 a ton to $2, which is equivalent to a saving of $157.40 in the four months, or $500 a year. This would make the approximate saving in the operation of the plant over hand labor about $5,000.

COST OF OPERATION OF THREE PORTABLE CONVEYORS AT MONTEVALLO MINES

Depreciation on $3,000; estimated life 10 years		$300.00
Average interest @ 6 per cent—		
$11/10 \times \frac{\$3,000}{2} \times .06$	99.00	
Repairs and maintenance	120.00	
Total annual fixed charges		$519.00
Fixed charges prorated for four months	$173.00	
Power—3,040 kw.-hr. @ 2c. per kw.-hr.	60.80	
Labor loading, 5,000 tons @ 8c. per ton	400.00	
Labor unloading, 4,500 tons @ 5c. per ton	225.00	
Total operating cost for four months		$858.80

Total tonnage handled (5,000 + 4,500) = 9,500.
Cost per ton, $858.80 ÷ 9,500 = 9.04c.

How to Calculate Washed Coal and Refuse From Ash and Sulphur Determinations

By Kenneth D. Dodds*
Pittsburgh, Pa.

In order to know the extent to which a coal washery is separating raw coal into washed coal and refuse, the proportion of each product in relation to the original material must be determined. If each lot of raw coal, washed coal and refuse were weighed, the percentage of the mine production delivered by the washery as cleaned coal and as refuse could be ascertained by means of a simple calculation, using the weights involved; that is,

$$\text{Percentage of washed coal} = \frac{\text{Weight of washed coal}}{\text{Weight of raw coal}} \times 100,$$

$$\text{and Percentage of refuse} = \frac{\text{Weight of refuse}}{\text{Weight of raw coal}} \times 100.$$

The accuracy of the results obtained by such a method would be limited only by the accuracy of the scales on which the weighings were made and the carefulness of the operator, but the method would nevertheless be impractical because of the labor involved and the necessity of running the washery intermittently.

A simpler procedure, involving elementary analytical chemistry and mathematics, while avoiding the inherent difficulties of direct weighing, nevertheless yields satisfactory results. The principle of this method may be stated in this manner: The magnitude of any property of a mixture of substances is equal to the sum of the values of the same property in each constituent multiplied by the percentage of each constituent in the mixture. This axiom is the so-called "Law of Mixtures." In mathematical terms,

$$Z = Az + Bz + Cz + \ldots\ldots\ldots\ldots N_z;$$

where Z is the value of some property (specific gravity, ash, sulphur, etc.) of the mixture, z is the value of the same property in each of the components which are present in the percentages A, B, C, etc.

If raw coal is regarded as a mixture of washed coal and refuse, the application of the above general equation is readily understood. To illustrate by an actual case, let us consider a coal and its products which on being analyzed for sulphur and ash gave results as shown in Table I.

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TABLE I—ASH AND SULPHUR IN COAL AND WASHED PRODUCTS†

	Per Cent Ash	Per Cent Sulphur
Raw coal	16.9	2.59
Washed coal	6.1	0.90
Refuse	55.9	8.48

† Fraser & Yancey, Transactions American Institute of Mining and Metallurgical Engineers; preprint with Mining and Metallurgy.

If X represents the percentage of washed coal, then $1 = X$ will, of course, be refuse. Substituting the percentages of ash from Table I in the formula, we get

$$16.9 = 6.1X + 55.9(1 - X)$$

from which $49.8X = 39.0$

and $X = 78.3$ per cent (washed coal)

$1 - X = 100 - 78.3$

$= 21.7$ per cent (refuse)

Thus if a few simple analyses are made, valuable information can be obtained easily and quickly.

One might reasonably expect, on first thought, that the result obtained by using sulphur percentages would be the same as that from ash. For some coals this is true or nearly true, but for others, as will be shown later, there is a considerable difference between the two. With the coal already discussed the calculation on the basis of sulphur is

$$2.59 = 0.90X + 8.48(1 - X)$$

$$7.58X = 5.89$$

$X = 77.7$ per cent (washed coal)

$1 - X = 22.3$ per cent (refuse)

For this coal, then, either ash or sulphur may be used as the basis for the computation, with a fair agreement in the final figures. This does not hold true, however, for all coals. As an example of one which does not give the same result in the two instances, consider the data in Table II.

TABLE II—ASH AND SULPHUR IN ANOTHER COAL AND WASHED PRODUCT‡

	Per Cent Ash	Per Cent Sulphur
Raw coal	17.62	3.54
Washed coal	6.65	2.44
Refuse	53.15	9.09

‡ H. C. Ray, *Coal Industry*, December, 1919.

When the figures for ash are taken, we find

$$17.62 = 6.65X + 53.15(1 - X)$$

$X = 76.4$ per cent (washed coal)

$1 - X = 23.6$ per cent (refuse)

Similarly for sulphur,

$$3.54 = 2.44X + 9.09(1 - X)$$

$X = 83.5$ per cent (washed coal)

$1 - X = 16.5$ per cent (refuse)

The difference between these two values is, of course, much too great to be considered as even an approximate check, and the question, therefore, arises as to which of the two values correctly represents the conditions. When we recall that ash and sulphur are not present in the materials as one single compound but are independent of each other we suspect that any removal of one does not necessarily involve the elimination of a corresponding quantity of the other. Consequently, if it can be demonstrated that these two impurities are not interdependent, it will follow that both of the foregoing results are true—83.5 per cent if only sulphur is taken into account and 76.4 per cent when ash alone is considered. If ash and sulphur are not equally removed, then the ratio of each of these to the total impurities (i.e., the sum of ash and sulphur) will be different for the raw coal, washed coal and refuse, while if the contrary condition obtains, these ratios will be the same in each case. The ratio of ash to total impurities

in the raw coal is $\frac{17.62}{17.62 + 3.54}$ or 83.3 per cent, and likewise for the two products as in Table III.

TABLE III—RATIO ASH AND SULPHUR TO TOTAL IMPURITIES IN COAL AND WASHED PRODUCT

	Ash Total Impurities Per Cent	Sulphur Total Impurities Per Cent
Raw coal	83.3	16.7
Washed coal	73.2	26.8
Refuse	85.4	14.6

These figures show at once that the washing process does not eliminate ash and sulphur in the same proportion, but that instead sulphur is concentrated in the washed coal and ash in the refuse. This segregation of impurities accounts for the difference in percentages of washed coal observed when calculations are based on each impurity. If instead of segregating, sulphur and ash left the raw coal in equal proportions, ratios such as those in Table III would be identical for raw coal, washed coal and refuse. This means that the relative quantities of each impurity would be the same for the three materials, and would differ only in amount. Hence in this case 83.3 per cent of the total impurities in both the washed coal and the refuse would be ash, the same as in the raw coal. If this state of affairs existed, the analyses would be as shown in Table IV.

TABLE IV—ASSUMING PERCENTAGE OF ANY IMPURITY TO TOTAL IMPURITY IS SAME IN WASHED COAL AND REFUSE AS IN RAW COAL

	Per Cent Ash	Per Cent Sulphur
Raw coal	17.62	3.54
Washed coal ([6.65 + 2.44] x 0.833) ([6.65 + 2.44] x 0.167)	7.57	1.52
Refuse ([53.15 + 9.09] x 0.833) ([53.15 + 9.09] x 0.167)	51.85	10.40

On substituting the above derived percentages in the formula, it is found that the same result is obtained on each basis:

Based on ash: $17.62 = 7.57\,X + 51.85\,(1 - X)$
$X = 77.3$ per cent

Based on sulphur: $3.54 = 1.52\,X + 10.40\,(1 - X)$
$X = 77.3$ per cent

The examples cited show that washery calculations cannot safely be based on ash or sulphur indiscriminately, unless it is known that these are eliminated in the same, or substantially the same, ratio.

All coals on being washed behave in one of three ways: sulphur and ash are either removed in the same ratio, in widely different ratios, or as an average between these extremes. The importance of knowing upon which impurity to base calculations is, therefore, self-evident. A little study will convince one that if total impurities are considered in preference to any single impurity, any differences in ratios of elimination will be automatically adjusted, and regardless to which of the three above classes the coal may belong, the percentage of washed coal as indicated on this basis will be the same as if sulphur and ash were indeed eliminated equally. This is proved by adding the analyses shown in Table II and rearranging as in Table V:

TABLE V—TOTAL IMPURITIES IN RAW COAL, WASHED COAL AND REFUSE

	Per Cent Ash + Sulphur
Raw coal	21.16
Washed coal	9.09
Refuse	62.24

Substitution of these figures in the formula gives the following equation,

$0.2116 = 0.0909\,X + 0.6224\,(1 - X)$
$X = 77.3$ per cent (washed coal)

This result, unlike those obtained by calculating on sulphur and ash separately, is correct for both.

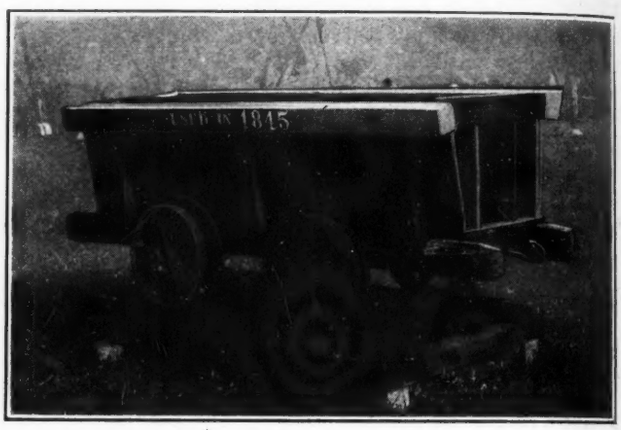
As the purpose of washing coal is to remove both undesirable substances to as great an extent as possible, it seems that total impurities should be adopted as the fundamental basis of washery calculations, rather than any single impurity.

NOTE—The author is indebted to Dean H. B. Meller and Prof. E. G. Hill, of the University of Pittsburgh School of Mines, for helpful suggestions in the preparation of this article.

An Anthracite Mine Car Discovered Dating Back, at Least, to the Year 1845

NOT often do mining relics of the past come down to us in such an excellent state of preservation as the mine car that was found in the old workings of the Hillman Bed at the No. 14 Colliery of the Pennsylvania Coal Co., between Pittston and Wilkes-Barre.

This mine car was found in some old workings that had been opened by a tunnel. From the records in the possession of the Pennsylvania Coal Co. it was found that no work had been done in this section of the mine since 1845. So there is no doubt that the mine car dates back at least to that year. It is therefore more



A MANIFEST PROGENITOR OF TODAY'S HARD-COAL CAR

Even today the anthracite car usually is a box on a track without any flare over the top of the wheels. The narrowness of the roadways prohibits the use of the wide cars of the bituminous-coal regions. In the soft-coal districts one is led to wonder which is the more remarkable, the width of the gage or the side overhang of the car body.

than 78 years old—how much older is problematical.

The Hillman Bed, in which it was used, is 8 ft. thick. The car contains 18.5 cu.ft. level full and with a 6-in. topping it would contain 6.5 cu.ft. more, or a total capacity of 25 cu.ft. It is 2 ft. 2 in. wide at the top and 1 ft. 8 in. wide at the bottom. It is 6 ft. 1 in. long and the height of the inside of the car is 1 ft. 7 in. The wheels are of a diameter of 16 in. and the gage is 24 in.

When the car was found the running gear, bottom sills and two of the uprights of the body were practically intact. From these uprights the rest of the body was built.

MECHANISM OF BOILER-SCALE FORMATION.—At the Pittsburgh experiment station of the U. S. Bureau of Mines the mechanism of scale formation in steam boilers is being studied, including the effect of temperature, pressure, character of surfaces and concentration of the water. A continuous test is being conducted on a commercial boiler in actual operation, in which a part of the suspended matter is continuously removed by an external filter through which the boiler water is circulated. The influence of added constituents is being noted.

Setting Diamonds in Drill Bits*

BY GEORGE J. YOUNG†
San Francisco, Calif.

SETTING a diamond in a diamond bit is somewhat similar in principle to setting a filling in a tooth, and the diamond setter develops a skill which is comparable to that shown by a good dentist. Seldom have the tools of the diamond setter been described, and this probably is because each diamond setter has his own kit. The work of diamond setting is a necessary accessory to diamond drilling and usually is done on the job. On the thoroughness of the setting depends not only the success of the drilling but also economical use of diamonds and reasonable costs.

A good diamond setter should have excellent mechanical training and familiarity with the tools of the craft as well as a good eye and innate aptitude for the task. Diamond setting is a fussy job, but it cannot be done in a fussy manner. To begin with a good light is necessary. Next, a solid bench about 6 ft. long with a low edge board to prevent tools from rolling off is essential. It should be equipped also with a good vise. The top of the table should be smooth and free from cracks.

The only other fixture necessary is a vertical stand which can be extemporized from pipe, pipe fittings, and a floor flange as shown in Fig. 1. This stand is used to support a breast drill, and downward pressure can be obtained by pulling down upon the end of the horizontal rod.

To hold the bit rigidly in position in the vise, a bit holder made as shown in Fig. 4 is used. The bit screws into the upper end as shown. It can be placed horizontally or vertically, as required. The necessary tools fall into several classes—measuring, cutting and drilling, calking, swaging, and miscellaneous.

*From *Engineering and Mining Journal-Press.*
†Associate editor, *Engineering and Mining Journal-Press.*

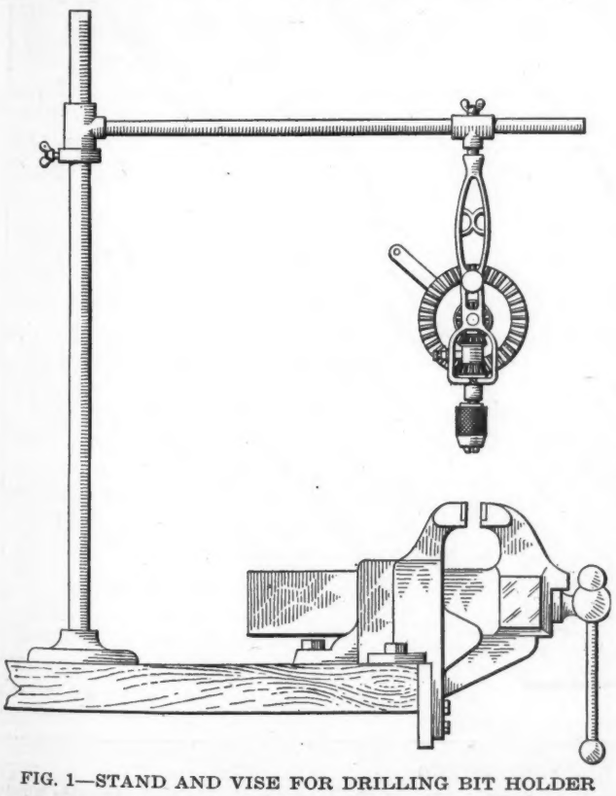


FIG. 1—STAND AND VISE FOR DRILLING BIT HOLDER

A simple pipe stand is used to support the hand drill. This is adjustable in two directions. Pressure on the horizontal pipe holds the drill to its work.

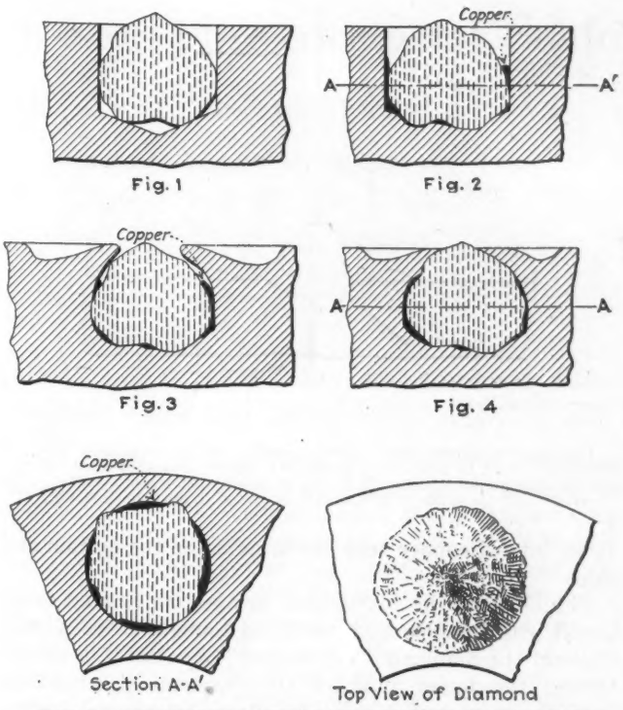


FIG. 2—SUCCESSIVE STEPS IN SETTING DIAMONDS

The hole is drilled of an accurate depth and width so that the diamond will project 1/100 in. and so that the hole will be well suited after chiseling to receive the diamond. The diameter is then set in as in Fig. 1. Copper strips are cut with a chisel and wedged in around the diamond as shown in Fig. 2, holding the sides and giving bearing to the bottom. Then the steel of the bit is swaged all around from a sufficient distance back from the diamond so that the diamond is buried in the bit without bringing sufficient pressure on that precious piece of abrasive to cause it to split. See Figs. 3 and 4.

The tool kit comprises the following: For measuring, two pairs of inside and outside calipers and a caliper square with inside-outside jaws; for cutting, a diamond point, a cape chisel, and small cold chisels of various sizes; for drilling, twist drills from $\frac{3}{8}$ and $\frac{1}{4}$ in. diminishing by $\frac{1}{32}$ in. successive sizes and both wire gage and regular sizes; off-set, round-nose, and square and round-end calking tools; swages, center punches, and sets; miscellaneous, three sizes of ball-pein hammers, 4, 8, 12 oz.; a "pick," copper set, snips, 10-in. Stillson wrench, pincettes, gage rings, magnifying glass, and portable balance with carat weights.

STONE IS CAREFULLY BEDDED IN THE STEEL

The tools used in setting the stones are shown in Fig. 4. In setting a diamond the bit is marked by means of a center punch at the positions of the principal stones. The stones are carefully selected, larger stones for the important cutting positions and smaller stones, used stones, or fragments for the clearance positions. It is worthy of note that the diamonds as purchased are chosen from a stock first selected by the dealer.

Having selected a stone, it is carefully studied and decision made as to the cutting position to which it is best adapted. Its maximum diameter is measured, as well as its maximum height. The cutting surface of the stone is so placed that it will be $\frac{1}{100}$ in. above the bit. The proper diameter of bit is then selected and a hole of the right depth bored. By means of the chisels the hole is trimmed and cut to take the diamond. Copper strips are cut with the cold chisel and wedged in around the diamond until it is securely held at all points.

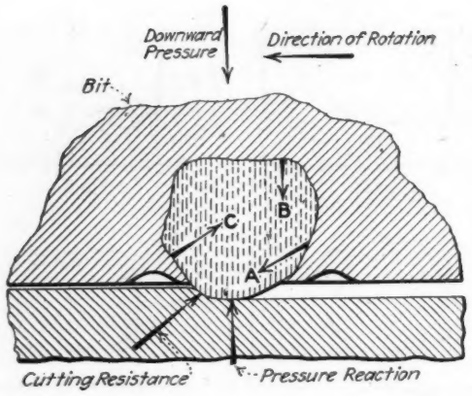


FIG. 3—FORCES ACTING ON DIAMOND WHEN CUTTING

This figure shows the couples acting on the diamond both to displace it and to keep it in position. If the diamond does not get the right kind of support it is likely to turn and work loose. The recovery will be quite difficult and in cases it may be lost entirely.

These bits of copper seat the diamond on the bottom and sides.

The steel of the bit is then swaged all around from a sufficient distance back to afford enough metal to close in about the diamond. The "collar" of metal thus drawn around the upper part of the diamond is gradually swaged closer and closer, avoiding any pressure upon the diamond. It is finally drawn down upon the diamond, the setter closing it in from the bottom up until the diamond is almost completely buried in the steel.

The last operation consists of calking the fringe of metal about the stone until it bears evenly upon it at all points and leaves only the upper surface of the stone exposed. This operation is a delicate one, for the setter must hit just hard enough to draw the metal without allowing the stone to get any more than a light effect from the blow. There is danger of splitting the stone, especially in calking.

The diamond setter will find it to his advantage to study Fig. 3, in which are illustrated the forces to which a diamond in the bottom surface of the bit is subjected. The forces of outside application are due to the thrust or weight of the drill rods and the rotation of the bit. The tendency of these forces is to rotate the stone in its setting. The irregularities of the diamond, and the seat formed for them, resist the rotation. The arrows *A*, *B* and *C* in Fig. 3 indicate the direction of the forces acting on the diamond.

Determination of the best position in which to set a given stone does not admit of fixed rules, but is based upon experience and experienced judgment. Different diamond setters will agree that there is one position in which a given stone can be set and in which it will be safely held and will cut with minimum wear.

GERMANY THINKS IT A CRIME to seize her mines. She doesn't believe in anything more drastic than dynamiting and flooding.—*Muskogee Phoenix.*

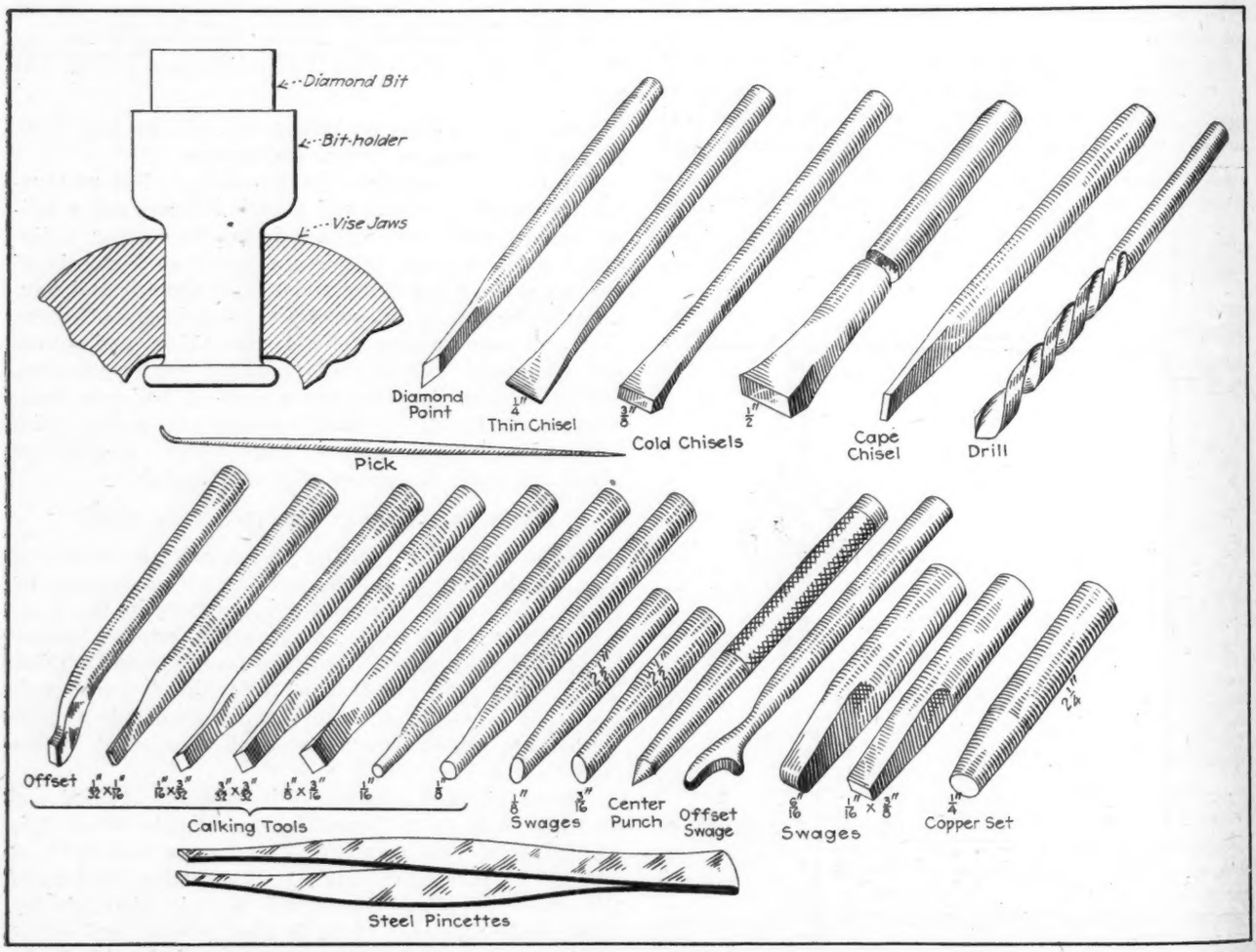


FIG. 4—TOOL KIT OF DIAMOND SETTER

In the upper left-hand corner are the jaws of the vise holding the bit holder so that the bit can be drilled. To the right are the chisels which condition the hole for the reception of the diamond. Below it are the calking tools which fit the copper round the diamond and the swages that push the steel so as to envelope both. At the base of the drawing are the steel pincettes which are used in the handling of the small copper chiselings for insertion between the diamond and the walls and bottom of the hole.

Biggest Asiatic Coal Producer and Thickest Coal Seam In the World at Fushun, South Manchuria

Will Extract Enough Material to Girdle Earth at Equator with Solid Wall 29 Ft. High and 10 Ft. Thick—Coal 430 Ft. Thick at One End of Field—In Places Only 30 Ft. Below Ground

By W. Laurie Seaman
Glen Cove, N. Y.

MANY observations of interest made during a trip to the Fushun colliery and some views of the mines obtained from the South Manchuria Railway Co. profitably may be added to the remarks and illustrations presented by N. Yamaoka in his excellent articles in *Coal Age*, May 19 and May 26, 1921. Only slowly can a mere article bring home to the reader this amazing coal property, its total content of 1,200,000,000 tons, the immense thickness of its single seam, which at the western end is 430 ft. thick, and its suitability in places for stripping, its cover in one place being only about 30 ft.

The Fushun coal field of Manchuria, with a daily output of 12,000 tons, is situated about 35 miles southeast of Mukden and covers barely 15 square miles. Forming a narrow rectangular area 10 miles long and running along the valley of the Hun River in an eastward direction, the main coal deposit consists of but one 50- to 180-ft. seam with an average thickness of about 150 ft. At the western end it grows even thicker, reaching 430 ft. and is found in one place but 30 ft. below the ground surface. Seldom is such an abundance of potential energy found in so small an area, especially in a single seam.

Electric Hoists Pull Wagons Out of Pit

That portion of this coal field which lies close to the surface is mined by the highly efficient open-cut process, which consists of stripping off the overlying materials and shoveling the coal into wagons which are drawn by electric hoists up inclined roadways to the edge of the strip pit. If the coal and overburden that has been excavated in the past and will be removed before the field is exhausted were piled around the earth at the equator it would make, so estimators have calculated, a solid wall 29 ft. high and 10 ft. thick. In other words, this gigantic undertaking will require 5.4 times as much excavation as was necessary for the digging of the Panama Canal.

The Koreans were the first to obtain coal from this region. That was some 600 years ago. It was used by them in baking their famous earthenware. After the occupation of Manchuria by the Chinese, which took place about 200 years ago, mining was entirely suspended, its continuance being prohibited by the Chinese Government because of a superstitious belief in the Fengshui, or Spirit of Nature. It appears that Fushun was situated too close to the mausoleum of Tai-Tsu, an emperor of the Manchu Dynasty, to meet with divine approval.

During the Russo-Japanese War the mines were worked on a small scale by the Russians, but not until 1907, when the South Manchuria Railway Co. acquired this property from the Japanese Government, was mining undertaken on an extensive scale. Shafts were sunk annually until there were eight in all, which in conjunction with the strip pit, are producing 3,500,000 tons yearly.

The visitor, after traveling over the level plains of Manchuria, on pulling into Fushun station is filled with awe to see the immense chasm that was filled with earth and coal but a few years ago. The steam shovels working in the vast pit look like mere toys and the hundreds of coal wagons and thousands of Chinese coolie miners are but moving specks within the depths of this artificial valley, which already has attained the size of the celebrated Culebra cut where the Panama Canal pierces the backbone of the Americas. After coal has been removed for a period of 70 years at a possible output of 10,000 tons (equal to a train of 250 cars) each working day only a romantic mind will be able to imagine its original appearance.

My train was nearly two hours late in reaching Fushun, allowing me only a hurried trip around the colliery. After a study of charts and maps and a "swell" lunch at the Colliery Club, we set out to see the sights before my predetermined return to Mukden on the afternoon train. As the Japanese are anxious to receive world comment, either favorable or adverse, on their activities in South Manchuria, I found them quite ready to furnish me with any information that I might desire.

The underground mines were first worked with shafts and the room-and-pillar system, but the mining engineers soon discovered that, if this plan of operation were persistently followed, 70 per cent of the coal must be left underground, to serve as roof and shaft supports and the like. Experiments proved that by replacing coal with sand, flushed in by a hydraulic stowage system, thus furnishing the necessary support for side walls and roof, 70 or even 80 per cent of the coal could be removed, thereby greatly increasing the efficiency and capacity of each shaft.

Fourteen Large Flushing Plants Fill Mines

Fourteen huge flushing plants were placed in operation by 1920. The Japanese engineers mix just enough water with the sand to form a flowable mass, which is forced under pressure of 10 atmospheres through pipe lines to chambers already barricaded and ready to be packed with sand. A minimum volume of water is used, as it must be pumped from the mine after serving its purpose of stowing the sand in the various subterranean passages.

In 1919 more than 7,800,000 pieces of mine timber were consumed in the Fushun Colliery. This number was materially lessened in the years that followed, the introduction of the hydraulic stowage system permitting much timber to be recovered as the sand flushing progressed.

The town of Fushun sprung up as the natural out-

Scenes at the Fushun Strip Pit, Shaft and Underground Mine Workings in M

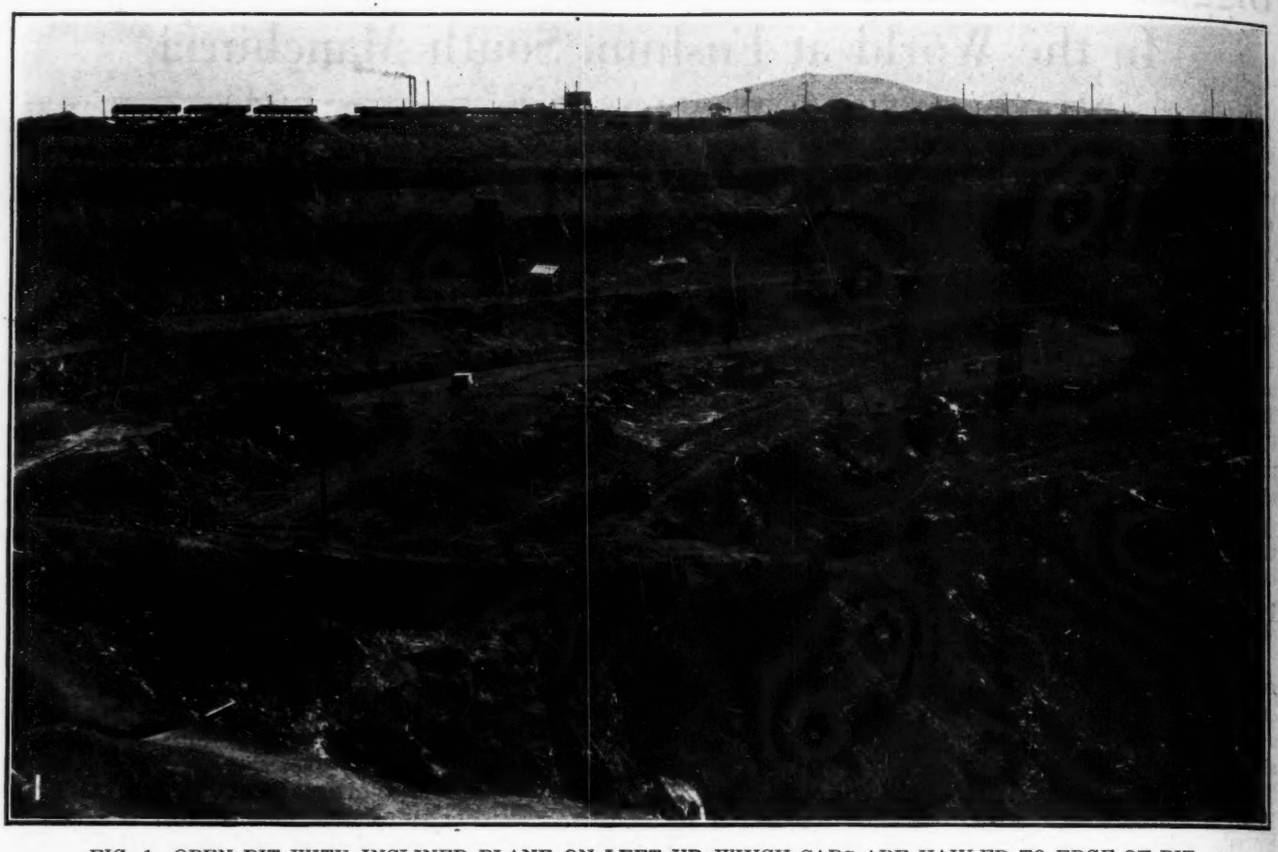
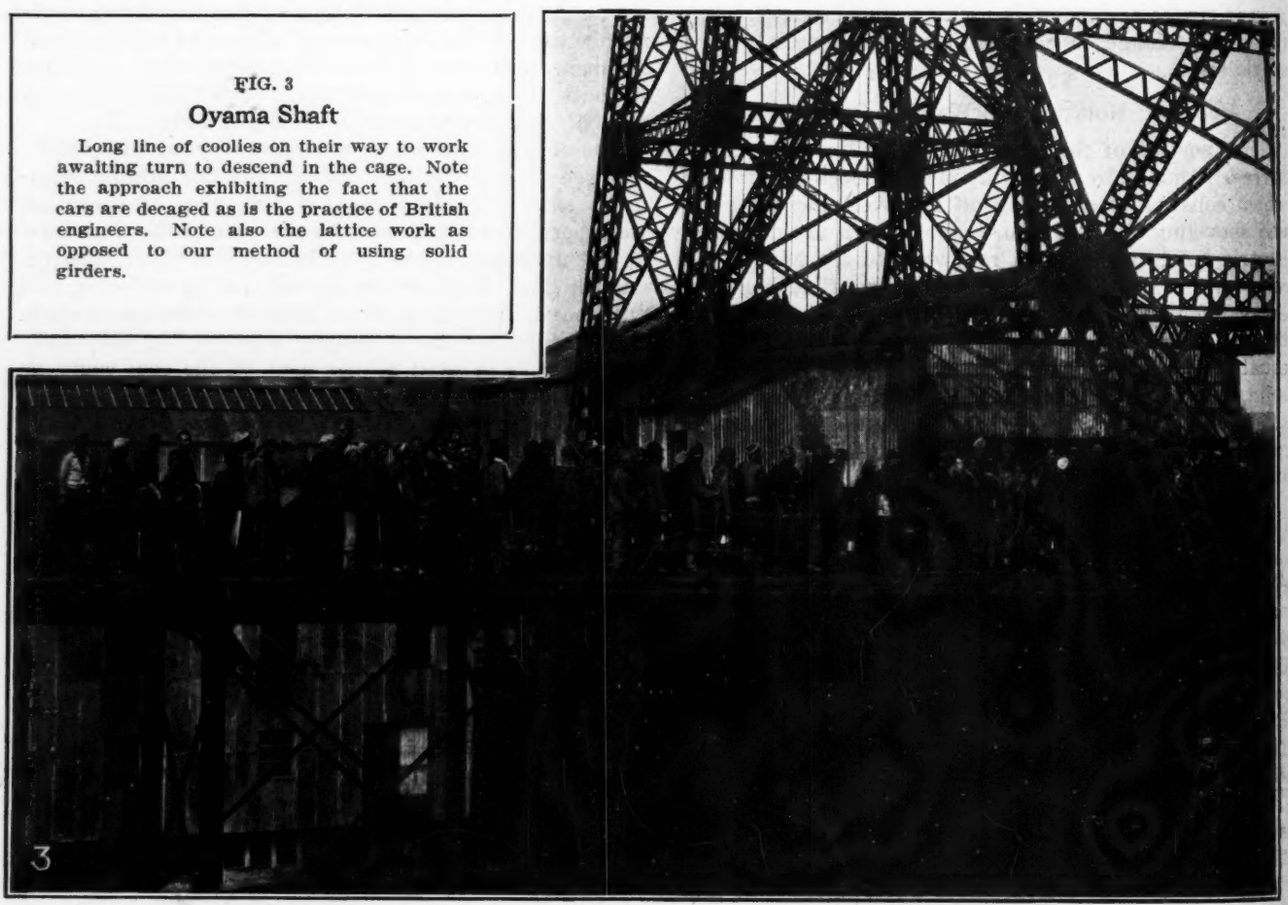


FIG. 1—OPEN PIT WITH INCLINED PLANE ON LEFT UP WHICH CARS ARE HAULED TO EDGE OF PIT

FIG. 3

Oyama Shaft

Long line of coolies on their way to work awaiting turn to descend in the cage. Note the approach exhibiting the fact that the cars are decaged as is the practice of British engineers. Note also the lattice work as opposed to our method of using solid girders.



in Manchuria, Where Coal Was Mined by Koreans Six Hundred Years Ago

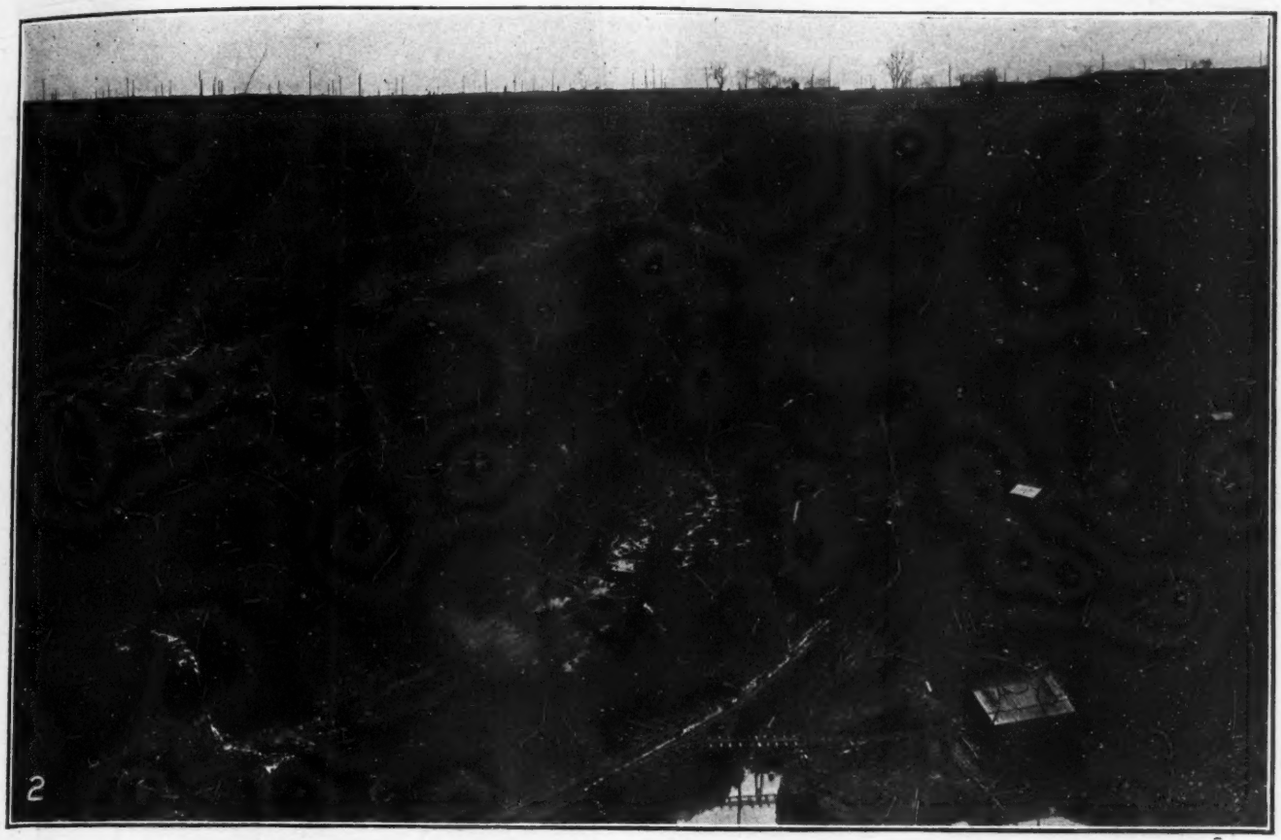


FIG. 2—DEEPEST POINT IN OPEN PIT AS FAR AS IT HAD BEEN DEVELOPED WHEN PICTURE WAS TAKEN

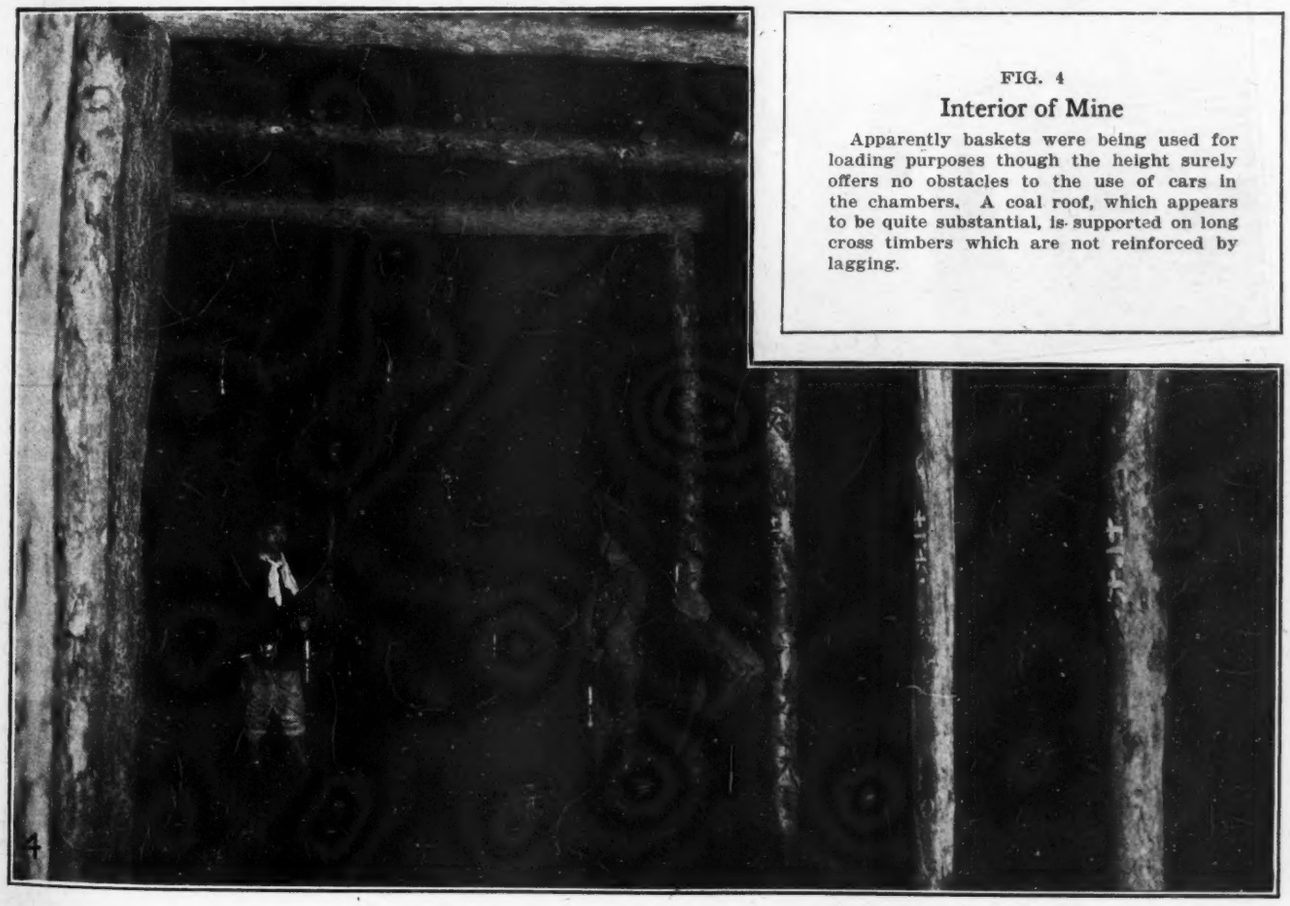


FIG. 4

Interior of Mine

Apparently baskets were being used for loading purposes though the height surely offers no obstacles to the use of cars in the chambers. A coal roof, which appears to be quite substantial, is supported on long cross timbers which are not reinforced by lagging.

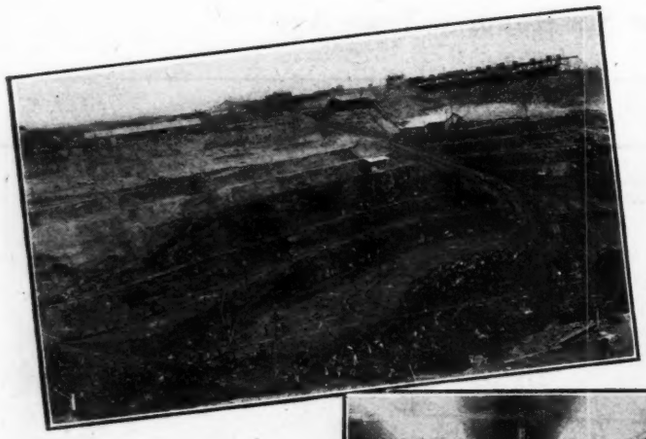


FIG. 1—ANOTHER VIEW OF AN OPEN PIT. FIG. 2—SOME OF THE LEVEL ROADWAYS IN STRIP PIT. FIG. 3 — PICKING TABLES AT THE TIPPLE OF THE OYAMA SHAFT. APPARENTLY THE REFUSE IS THROWN IN BASKETS FOR REMOVAL.

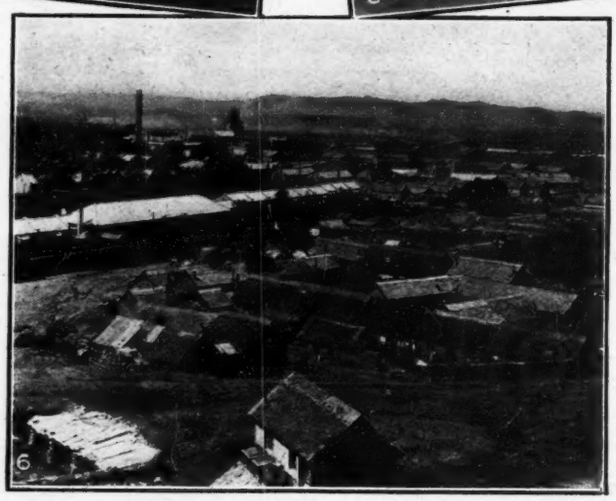


FIG. 4 — COOLIE MESS HALL. FIG. 5—QUARTERS FOR COOLIES, WHO APPARENTLY ARE A CHEERFUL LOT OF MEN. FIG. 6—COOLIE SECTION OF TOWN. NOTE THE LONG BARRACKS IN WHICH THEY LIVE. HEADFRAME OF LAOHUTAI SHAFT IN REAR GROUND.

come of the mining activity and the operating company in consequence was compelled to construct hundreds of buildings, highways, water works and other conveniences.

Most of the mine workers, and 35,000 of them are employed, are Chinese from the Shantung and Chihli districts of north China. They receive free lodging and medical attention, three rationed meals at 14 sen (7c. U. S. currency) per day and are paid an average daily wage of 55 sen for nine hours work. Assuming a year as 250 working days, their annual earnings total nearly 140 yen ($70 in U. S. currency).

Fully 60 per cent of the Fushun coal is consumed by the railway in Manchuria, and the remainder is either sold to local industries or exported through the port of Dairen. Prominent foreign engineers and mining experts have gone away from Fushun marvelling at the equipment and layout which the South Manchuria Railway Co. has inaugurated during the fifteen years of its management.

Consumption Should Control and Determine Number and Ownership of Coal Cars

By L. S. Evans*
Richmond, Va.

BITUMINOUS coal is produced as the market demands it, save as transportation, or at intervals miners' strikes, interfere. Demand is measured by two elements, requirements for consumption plus or minus coal for or from storage. Transportation is the great factor in leveling off peaks of production and setting the brake on output. The soft-coal mines have developed capacity more than ample to meet consumption.

Since the potential supply is superabundant and the aggregate productive capacity of the mines exceeds consumption, it follows that transportation is the controlling and limiting factor in balancing production with consumption.

The only storage of coal at the mines is the natural supply within the earth. Coal loaded in mine cars underground is carried to the mine mouth and dumped into railroad cars. When no cars are supplied the mines stand idle. With transportation the dominant factor there is no advantage in storing coal, even where possible, above ground at the mines. The place to store coal is at the point of consumption.

Railroads reaching the mines are expected to own coal cars in numbers sufficient to supply the country's needs, hence the coal roads must bear the financial burden of such ownership and upon them falls responsibility for transporting the country's coal supply. These coal originating roads buy and maintain equipment either in anticipation of the annually constant increase in consumption or after the increase has occurred. For financial reasons, equipment purchases commonly are made after the need has arisen and car shortage has appeared.

Here is a remedial suggestion: let consumption control and determine the number of cars and their ownership. Consumption comes first; it sets the need for production. Every railroad should own that number of coal cars required to protect the consumers it serves. The number of cars owned by each should depend mainly upon the tonnage consumed on its line. In practice, empty cars would move to coal roads counterbalanced by loaded cars from the coal roads. Car shortages would seldom occur, and only on the underequipped roads. Many roads, instead of a few, would own the cars, and this distribution of the financial burden would make it easier to maintain equipment at the point of adequacy.

Box cars carry the widest range of commodities and are used everywhere, therefore all roads own box cars. Whether or not consumption or production governs the ownership of box cars is not the point: the fact that all roads own them means that there is a constant interchange of cars of the same kind. This condition tends to balance car movements and to prevent national shortages by localizing them.

Coal cars are not generally useful and they are not generally owned. Coal-originating roads are almost the exclusive owners of coal-carrying equipment. Some roads own coal cars to protect the fuel supply for their locomotives, but apparently none has considered such ownership for the protection of its industries and other consumers along its lines.

The coal roads send out loaded cars to various destinations on connecting lines, there to be unloaded and returned empty to the parent lines for reloading. They are in effect interchanging their own equipment, which means that they must own sufficient cars to supply the consumers on all lines plus their own.

Under existing conditions how can there be a balanced movement of coal cars even approximating the interchange of box cars?

*Eastern Coal & Export Corporation.

Engineers Stress Advantage of Storage to Early Movement of Domestic Coal

IN URGING engineers to take up with their employers and clients the advisability of effecting an earlier movement of domestic coal—a step taken at the request of John Hays Hammond, chairman of the President's Coal Commission—the Federated American Engineering Societies has addressed a letter to its member societies, of which the following is a part:

Mr. Hammond stated that one of the important factors involved in the solution of the coal situation is that of coal storage. He further stated that it is a more difficult task to obtain the storage of domestic coal than that of coal purchased by large users. He is particularly anxious, therefore, that an effort be made at the earliest possible moment to obtain a larger storage of domestic coal. He believes that the engineers of the country are in a particularly advantageous position to encourage this movement. If engineers will point out to their clients and employers the advantages, accruing both to the public and to the coal industry, which can be obtained if coal is stored during the summer, it is believed that they will be willing to arrange for the domestic coal purchases of their employees.

The Coal Commission is particularly impressed by the plan devised by L. S. Storrs, of the Connecticut Company. Under that plan the employee submits, prior to April 1, an estimate of his winter fuel needs. Delivery is to be made at the option of the retail dealer during the six months' period beginning with April. Full payment for the coal will be made by the company at any time delivery is effected.

The company is reimbursed by deducting the cost of the coal from the employee's salary. These deductions, however, are spread in equal installments over the six months' period. Under this plan the employer can see to it that the coal is purchased at the best possible price. He can influence the dealer to deliver the maximum practicable amount of coal early in the season. The employees, many of whom are accustomed to buying coal in very small lots during the period of highest prices and distribution difficulties, can make substantial savings, and be assured of sufficient quantity of coal when needed.

Problems of Operating Men

Edited by James T. Beard

Retimbering an Old Slope

Two Methods Discussed—First, Gives Insufficient Support to Timbers Above — Second, Has Short Legs Hitched Into the Coal

REFERRING to the problem presented in the inquiry signed "Mac," which appeared in *Coal Age*, March 1, p. 380, it occurred to me, in reading his letter, that both of the methods suggested for the retimbering of the old slope where the roof had fallen to a considerable height, could be improved.

The first method he mentions, using double timbers and supporting the collar on two legs set on the bottom is, in my opinion, very poor. Even if the bottom is hard and furnishes a good foundation for the legs, the use of double timbers on this 8-ft. slope is not to be recommended. In that method the legs stand out where they will be struck by the first car that jumps the track. This would mean a downfall of roof and tangled timbers requiring time to clean up and retimber.

If the bottom is hard, cap-pieces should be used over the posts. In fact they will serve a useful purpose in any event, as they assist to wedge the upper timbers and lagging tighter against the roof. For these reasons, I would set aside this first method as being in no way adapted to the situation.

Suggests Supporting Collars on Short Legs

The second method suggested, in which the collar beam is supported in hitches cut in the two ribs, strikes me as a great improvement over the first. However, let me suggest that the use of short posts resting in hitches cut in the coal, after the manner shown in the accompanying figure, will prove an advantage provided the coal is hard as I assume it is in this case.

COLLAR BEAM SET ON SHORT LEGS

The statement that the weight is breaking the timbers and the frail soapstone overlying the seam, and nothing being said in regard to the crushing of the coal, leave me to conclude that the coal is hard and will offer a good support for short posts used to support the collar beams.

The short posts will not add materially to the cost of the timbering, as compared with the method of supporting the collar beams in hitches cut close to the roof. The roof hitches would have to be cut wide enough to permit the collar beams to be swung into position. On the other hand, the cutting for the short legs will be no greater in amount and more readily made.

The length of these short posts will be governed much by the nature of the coal seam, as the posts should be set on that part of the stratum furnishing the firmest support. As shown in the figure, the posts should be inclined slightly toward the center of the opening, so as to throw the weight of the overburden into the rib.

As indicated by the dotted lines in the figure, a temporary post can be used, if needed to support the collar beam, while putting the timbers in place. At times, if desired, a short post may be set on one side of the entry only, the other end of the collar beam then being supported in a hitch cut in the rim, after the manner suggested by the correspondent.

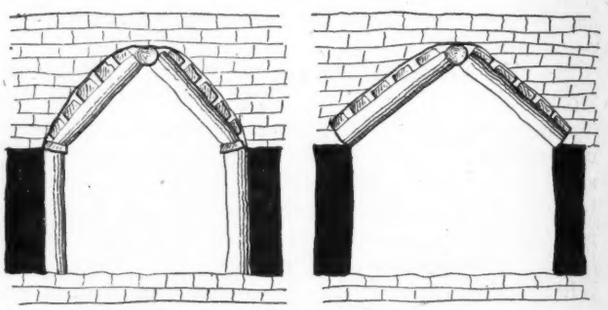
Fairmont, W. Va. M. L. O'Neil.

Another Letter

Herringbone method of timbering—Two plans suggested—Steel and concrete for support of ribs.

WHEN reading the inquiry signed "Mac," *Coal Age*, March 1, p. 380, it seemed to me that there would be nothing better for his purpose than the herringbone method of timbering. I have always found that method to give excellent results in the support of bad roof and particularly, in a case like this, where the roof has fallen to a considerable height.

In the use of this method, I have two plans to suggest, as shown in the accompanying figure. The plan



TWO FORMS OF HERRINGBONE TIMBERING

on the left of the figure, however, is open to the objection that the two legs forming a timber set crowd the entry and are liable to be knocked out by a derailed car. For this reason, I would only use legs for the support of the timbers in cases where the coal was very soft or it was impracticable to employ the method shown on the right of the figure.

By that method the two roof struts butt into the solid strata just above the coal seam, which gives them a firm support and leaves the roadway clear of all obstruction. In both of these methods, longitudinal stringers are used at the crown and are held in position by the diagonal roof struts, as appears in the figure. Lagging is used behind the roof struts, for the support of the loose material between sets.

In particular cases, where support must be given to the soft coal forming the ribs, I would use steel props and longitudinal girders. Between each prop a

form should be built and the space behind filled with concrete, which makes a permanent job. I have used these methods a great deal, particularly in longwall work where the roof above the roads had fallen to a considerable height. W. DICKINSON.

Bay City, Mich.

Relative Danger in the Working of Non-Gaseous Mines

Discussion not complete without considering the non-gaseous mines—Local explosions in those mines a twofold danger—Excessive use of blasting powder another danger.

RECENT issues of *Coal Age* have contained numerous letters relating to mine explosions and their prevention. While I am compelled to agree with what has been said by these correspondents, my feeling is that the discussion is incomplete, unless it considers alike the dangers of both gaseous and the so-called "non-gaseous mines."

Indeed, I often think that the gaseous mine is frequently the safest in respect to liability of explosion. At the present time, so much attention is given to the system of ventilation and the elimination of conditions that invite explosions of gas or dust, that there is little to fear, except from a possible accident to the system, or failure of some official to perform his duty.

TWO-FOLD DANGER IN LOCAL EXPLOSIONS

Of course, local explosions of gas in working places are chiefly confined to those mines known to be generating gas. At times such mines are worked with locked safety lamps and, again, open lights are permitted where an ample air current is in circulation. These local explosions are twofold in character. First, there may only result the severe burning or death of one or more men working in the place; and, second, the flame may be extended throughout the mine with terrible effects.

As has been previously remarked by George Edwards, the total of these local explosions is greater than is generally thought; because they are given no publicity, in comparison with the accounts that are broadcasted when a great mine disaster occurs. However, the second danger mentioned is not to be ignored, which consists in the liability of such a local explosion being propagated throughout the mine.

Taking these things into consideration, it is clear that we cannot afford to minimize the danger of a local gas explosion. In one respect it is true that the gaseous mine is more dangerous than a mine generating no gas, or in quantities so small as not to justify any alarm. The point I wish to emphasize, however, is that where a mine is well managed the danger arising from the presence of methane in the workings can be greatly reduced by proper ventilation.

COAL DUST MOST DANGEROUS FACTOR

Now, let me turn to another phase of the situation; namely, the danger of a coal-dust explosion. Probably, the most dangerous factor in this regard is the improper use of explosives. In most gaseous mines that I have visited, there are strict regulations relating to the use of explosives and the blasting of coal and rock.

On the other hand, in many non-gaseous mines we find the miners are the sole judges as to what is safe or unsafe in blasting. There is little restriction placed on the amount of explosive used in preparing a shot. Black blasting powder is employed and excessive charges are used with the idea of breaking the coal into smaller fragments so that it will be easier to load.

Even in machine mining, it is not uncommon to find the holes bored deeper than the cut and the charge located on the solid. The danger is all the greater when such a hole is tapped with coal dust. Surely, it should cause no surprise when such conditions as these result in an explosion; and it cannot be denied that these and other dangerous practices are followed, daily, by many miners.

It is not my claim, however, that all or even a majority of our miners are guilty in this respect. Nevertheless, if one miner out of a hundred at work in a mine takes a chance and an explosion follows, all the safety precautions that the remaining ninety and nine may take will not render them safe.

DANGEROUS PRACTICES COMMON AMONG MINERS

In this connection, let me mention a few other dangerous practices common in many mines. Briefly, these are the mixing of different grades of powder in the same hole; the use of too short a fuse or breaking off a part of the match on a squib; the firing of two or more shots, at the same time, in a close place and many like things that miners have been warned are dangerous.

My experience has been that such practices as these are more common in non-gaseous mines owing to the absence of strict rules and regulations in respect to blasting. To my mind the greatest need today is the enactment of certain laws that will apply to all mines whether or not they liberate explosive gas. Among these should be included the exclusive use of permissible explosives; the prohibition of solid shooting and providing for the firing of all shots by certified shotfirers. I believe this would eliminate one of the greatest dangers common to all non-gaseous mines.

Welch, W. Va. SAFETY INSPECTOR.

Correct Position of Regulator

Would place regulator on inby side of overcast—Danger of leakage into intake current much lessened—Position must be convenient and accessible.

ALLOW me to make a suggestion in regard to the position of the regulator shown in the figure illustrating the inquiry of James Bacon, *Coal Age*, Feb. 22, p. 341. In that figure, the regulator is shown in a position to the left, or on the outby side of the overcast.

If my understanding is correct, the right entries shown have been taking too much air and it was necessary to install a regulator to restrict the circulation in that pair of headings. As stated in the reply to this inquiry, the regulator should be placed "where it will not interfere with the hauling of coal."

In the present instance, no doubt, this requirement will place the regulator on the back entry. The reply states that it can be located on either side of the overcast. Allow me to suggest that it should be placed, preferably, on the inby or opposite side from that shown in the figure.

My reason for suggesting this change is that the air bridge would then be on the outby side of the regulator and subject to a less pressure. Should any leaks develop in the overcast, there will then be less of the return air escaping into the intake current than

would result with the regulator in the position shown in the figure, or when the air bridge is on the inby side of the regulator.

It is true that the difference in pressure and the amount of leakage will generally be quite small. It must be remembered, however, that a very small percentage of gas is a dangerous factor in respect to the dust question. For that reason alone, every possible precaution should be taken to prevent the contamination of the intake current with the gas in the return.

Linton, Ind. W. H. LUXTON.

Employment of Oriental Miners in Pacific Coast Mines

Misstatement of facts regarding employment of Oriental miners in Pacific Coast mines—Official figures show relatively small number.

IN the issue of *Coal Age* Feb. 8, p. 268, J. W. McBride of the Cinnebar Coal Mine, Bremer, Lewis County, Wash., writes informatively of the Pacific coal industry. With regard to the accuracy of certain statements attributed to the U. S. Coal Commission, the American Mining Congress and other authoritative sources to the effect that "there are one-third too many coal mines in operation," I have nothing to say.

In refuting this claim, however, Mr. McBride, after reviewing the production and consumption of coal in the West and Northwest, makes a brief reference to the class of miners employed in the mines of the Coast. He says: "The majority of the coal miners on the Pacific Coast of British Columbia are Japs, Chinese and Hindus—in the United States, all whites."

In this respect, the facts are that, according to the official figures for the year 1921, of the total number of men employed in and around the coal mines of Vancouver Island, 17.227 per cent were Orientals; while the percentage of Orientals employed underground was only 15.12. No Hindus were employed in these mines.

It is only fair to the Vancouver Island Industry, and to all associated with it, employees and operators, that Mr. McBride's sweeping and fallacious statement should be corrected. If allowed to go unchallenged its effect would be harmful, which I am sure the writer does not desire; nor would he wish to be responsible for such a result.

No doubt, the publication of the official figures for the year 1921, will serve to allay any misunderstanding that might exist in the minds of many who read the first article. The following table gives the number and race of the employees of the principal collieries on the Island of Vancouver:

	Number of Men Employed						
	Underground				Aboveground		
Name of Colliery	Whites	Indians	Chin.	Jap.	Whites	Chin.	Jap.
Western Fuel Corporation of Canada	1,112	3	0	0	504	109	0
Nanoose-Wellington Collieries	197	0	0	0	37	0	14
Granby Consolidated Mining, Smelting & Power Co.	344	0	0	0	132	0	0
King & Foster	17	0	0	0	10	0	0
Canadian Collieries (D) Ltd.	1,174	0	430	0	459	272	0
Pacific Coast Coal Mines	0	0	0	0	4	6	0
Total	2,844	3	430	0	1,146	387	14

Total number of men employed in and around the coal mines, on Vancouver Island, for the year 1921: Whites, 3,990; Indians, 3; Chinese, 817; Japanese, 14. Total, 4,824. These are official figures. R. D.

Victoria, B. C., Canada.

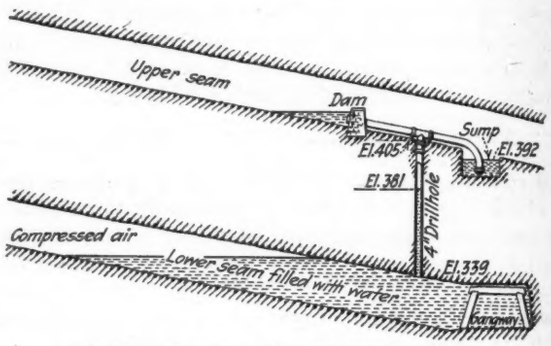
Inquiries Of General Interest

Pumping Phenomenon

Draining an Upper Seam Through a Drillhole Into a Seam Below Develops a Surprising Phenomenon for Which an Explanation Is Asked

IN THE mine where I am employed there is a 4-in. drillhole, sunk from the upper to the lower seam for the purpose of draining all the water into the seam below, or dewatering the upper seam at small expense. At this point both seams have an inclination of about 10 deg. All chambers are connected by crosscuts or breakthroughs and, about 300 ft. from the chamber in which the drillhole is located, some of the chambers have been driven through to the surface.

At the present time the lower workings are filled with water to a level of, say 381 ft. above bench. As



ILLUSTRATING A DRAINAGE PROBLEM

shown in my sketch, the corresponding elevations of the bottom and top of the drillhole are 339 and 405 ft., respectively, while the water level in the sump in the upper seam is 392 ft., or 13 ft. below the top of the drillhole.

There has been set in the rock, at the top of the drillhole, a 3-way connection, leading to the sump, the drillhole and a catch basin formed by a dam erected a short distance up the pitch from the drillhole, to collect the water coming from the upper levels. A pump is used to pump the water from the sump below the drillhole into the hole.

The point of interest that has puzzled us and which we would be glad to have explained is the following: Normally, the water in the drillhole rises to a height of 24 ft. below the top of the hole, which shows the elevation of water level in the old workings below 405 — 24 = 381 ft. But, after pumping the water from the sump below into the drillhole, say for five hours, when the pump is stopped the water will spout from the pipe leading to the dam and continue to flow for 2 or 3 hr. before it will slow down and finally cease. Following this action the water above the dam will then drain back into the drillhole where it will finally sink to a level of 381 ft., as before. PUMPMAN.

Mocanaqua, Pa.

Under the conditions explained in this inquiry there is nothing strange in the spouting back of the water,

after the pump has ceased forcing it down the drillhole into the old workings. In order to understand the situation, it must be remembered that the old workings are driven to the rise; and, while some of the chambers are said to have been driven through to the surface, there are doubtless others that form an airtight pocket at the head of the chamber where the rising water compresses the air after the water level has once reached the roof at the mouth of the chamber.

Under these conditions it is easy to see that the air in a number of these chambers is compressed to a pressure equal to the pressure due to the action of the pump, plus the head of water, as determined by the difference in water level in the chamber and the top of the drillhole. Naturally, when the pump is stopped this pressure acts to force the water through the pipe leading to the dam, under a pressure equal to that caused by the pump. The flow will continue until the compressed air has expanded to an amount that will just support the water column reaching to the dam. Beyond this point, as the water drains off gradually, in the old workings in the lower seam, the water level in the drillhole will again assume a normal position.

Examination Questions Answered

Alabama First-Class Examination, Birmingham, Jan. 22, 1923

(Selected Questions)

QUESTION—*What are the duties of a mine foreman? Explain fully.*

ANSWER—A mine foreman must devote all of his time to the supervision of the mine in his charge. He must reach the mine each morning in time to examine and sign the fireboss' report and see that no men enter the mine whose places are reported as unsafe for work, until the dangers reported have been removed, the places examined and found safe for work. The foreman must give his particular attention to the ventilation of the mine, the proper distribution of the air and the removal of all dangers that are reported to him.

The foreman should employ and assign work to such men as he finds are capable and fit for the work in hand. He must investigate all alleged violations of rules and ascertain as nearly as possible the causes of any accidents that may occur in the mine and the person or persons responsible for them. He must make out a full report of such accidents to be sent to the mine inspector in charge of the district. In a few words, the mine foreman is responsible for the safe and economic working of the mine in compliance with the mine law; and it is his duty to enforce all rules and regulations.

QUESTION—*Of what use is a correct map of a mine to the foreman?*

ANSWER—Such a map would enable him to plan all work on an intelligent basis and avoid the loss of much coal that will always result when entries and rooms are driven blindly or without the giving of sights to determine the direction of driving. If complete, the map will show many physical features that will enable the foreman to avoid running into danger.

QUESTION—*What are the dangers and the consequent results arising from not having accurate and complete surveys of the workings of a mine?*

ANSWER—One of the chief dangers is that of the near approach to old abandoned workings that may contain accumulations of water or gas. A body of water confined under a considerable head is a hidden danger that should be made known through careful and accurate surveys. The information conveyed to the foreman by an accurate map will enable him to avoid the danger present when driving under waterways or reservations for the prevention of damage to improvement on the surface. A wise foreman will always exercise special precautions under such areas, by leaving wider pillars and adopting methods of timbering that will prevent undue settlement and breaks that may extend to the surface.

QUESTION—*If when making an examination of a mine, you found a large body of explosive gas, state what precautions you would take to prevent an accident from same?*

ANSWER—If the discovery is made when the men are at work in the mine, no attempt must be made to disturb the gas, until after the men have been notified and withdrawn from the workings. Immediate steps must be taken to safeguard all entrances to the place or places where the gas is confined. Reliable men equipped with safety lamps must be placed where they will be able to prevent any person from entering such areas, until the danger has been removed after all the men have departed from the mine, and until the section has been finally examined and found safe.

QUESTION—*If a mine of which you had charge should suddenly develop firedamp, what would you consider your duty, according to the laws of Alabama?*

ANSWER—In such a case, the Alabama mining law (Sec. 11) provides that immediate notice be sent to the chief mine inspector and the inspector of the district, by the operator in charge of the mine. It is the duty of the foreman, therefore, to promptly notify the superintendent or manager of the mine, regarding the condition he has discovered. Having done this, his responsibility under the law ends, as far as notifying the inspection department is concerned. However, the foreman must still do everything in his power to safeguard the men, by withdrawing them promptly from the mine, by the safest route possible. He must then, in company with his firebosses, take charge of the work of removing the gas and making the mine safe.

QUESTION—*What is a safety lamp and why is it safe?*

ANSWER—A safety lamp, so-called, is a lamp whose flame is isolated from the outside atmosphere by means of a wire-gauze chimney and a similar gauze protecting all entrances for air openings to the lamp. Such a lamp, however, is only safe when properly handled by a competent person who understands its principle of construction and knows the danger of violating those principles by improperly handling the lamp or exposing it to a strong current or blast of air, or allowing the gauze to become heated or clogged with dirt.

QUESTION—*How many apertures are there in a square inch of the standard safety-lamp gauze?*

ANSWER—The wire mesh adopted as standard, by American and English safety-lamp manufacturers, is based on the experiments of Sir Humphry Davy, who found that the greatest degree of safety was insured by a mesh having 784 openings to the square inch, formed by 28 wires (No. 28 B.w.g.) to the inch.

Coal Wholesalers Issue Summary of Massachusetts Pure Coal Law

The Massachusetts Pure Coal Law, a recent enactment, is summarized by the American Wholesale Coal Association as follows:

Who Enforce the Law.—(1) Department of Public Health. (2) Local Board of Health. (3) Director of Standards. (4) Local sealers of weights and measures. (5) Or the agents or employees of any of them.

What They May Do.—(1) Enter each place where coal is stored or kept for sale. (2) Enter railroad trains, cars or any vehicle used to haul coal. (3) Inspect such coal and take a sample for analysis. (4) Analyze, inspect or otherwise test such coal. (5) Record and preserve as evidence the result of such tests. (6) If in the opinion of any of the several authorities the coal so tested is unfit for ordinary use they may (a) condemn, (b) destroy, (c) dispose of otherwise than for ordinary use.

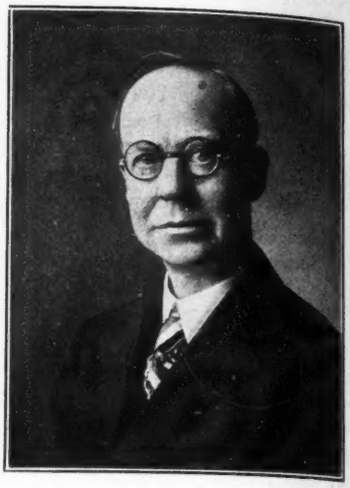
Penalties.—(1) For interfering in any way with the designated officers in enforcing the law, a fine of from $100 to $1,000, or imprisonment from one month to one year. (2) For having possession of, with intent to sell, selling, exposing or offering for sale coal which has been condemned, a fine of from $100 to $1,000 and or imprisonment from one month to one year. (3) For having possession of, with intent to sell, selling, exposing or offering for sale coal unfit for ordinary use, a fine of not more than $1,000 and or imprisonment for not more than one year. (4) For placing any foreign substance in any container with coal, for selling, exposing or offering for sale, or having possession, with intent to sell coal packed in receptacles containg any unreasonable amount of foreign substance, a fine of not more than $1,000 and or imprisonment for not more than one year. (5) For violating any provision of the act, or failing to comply with any request for information, or direction of the authorities, or for giving a false answer, a fine of not more than $50. (6) For fraud or deceit as to weight, for selling coal which is short in weight or measure, or contains an unreasonable amount of impurities, a fine of not more than $1,000 and or imprisonment for not more than one year.

It will be noted, says the bulletin of the wholesalers, that there is no absolute measure established by the law for the determination of the amount of slate, other impurities, etc., and that the whole matter is left to the judgment of the several local officers. There may be as many different standards of purity as there are officers attempting to apply the act.

A. J. Hoskin Succeeds the Late Dr. Stoek as Head of University Mining Department

Arthur J. Hoskin, research assistant professor of mining, has been appointed acting head of the department of mining, University of Illinois, to fill the vacancy caused by the sudden death of Dr. H. H. Stoek, founder of the department of mining at that institution.

The following is a summary of Professor Hoskin's thirty-three years of experience in mining and metallurgical work. After being graduated from the University of Wisconsin in 1890 he went immediately into active mining work, as assistant to a mining engineer at Idaho Springs, Colo. This work covered mineral and patent surveys and mine development. He then became assayer for the Omaha and Grant Smelter at Denver and selling agent for twelve of the mines at Cripple Creek and Leadville. For one year he was engaged in the U. S. Surveyor General's office at Denver, later becoming consulting engineer at Leadville. Here he received his coal-mining experience and from 1903 to 1906 he was chief engineer for the Leyden Coal Co., opening and operating one of its mines in a new district, near Denver. He designed and erected the first automatic coal machinery, such as cagers, weighers, box-car loaders, etc., used west of Iowa. He received the degree of mechanical engineer from Wisconsin on the basis of his experience and thesis on the mechanical equipment of the Leyden coal mine.



A. J. HOSKIN

For two years he was assistant professor of mining at the Colorado School of Mines, then full professor for four years at the same institution, which at that time was the largest mining school in the country. At various times during his six years at that institution he taught every course in the mining curriculum, introducing courses in coal mining, which before that time had not been taught in that college. He was in business for himself in Denver from 1917 to 1920, and then became mill superintendent for the Colorado United Mines Co.

He edited for a while the *Mining and Metallurgical Journal*, Denver, and the *Mining American*, which later merged with the *Mining Record*. He then became Western editor of *Mines and Minerals*, at the same time that Dr. Stoek was the Eastern editor.

Since going to the University of Illinois in 1921 he has made an extensive study of Illinois coal-mining problems, has visited every mining district in Illinois, both coal and metal, and is now completing important research in power costs in Illinois coal mining.

Utilities Consume 3,251,097 Tons of Coal In February; Decline Due to Short Month

Electric public-utility plants consumed 3,251,097 net tons of coal during February, according to a report just issued by the U. S. Geological Survey. This compares with 3,561,236 tons consumed during January, according to corrected returns.

Fuel oil consumed by public-utility plants in February totaled 1,166,203 barrels, compared with 1,256,604 barrels in January and 1,306,930 barrels in December, 1922.

The average daily production of electricity by public-utility power plants continues to break all records, as the average production in February was about 1½ per cent greater than that for January. February is the seventh consecutive month which has established a new record of average daily output. All indications at the present time point to 1923 being a remarkable year in the production of electricity. The average daily output of electricity during February was 155,300,000 kw.-hr. compared with 153,200,000 kw.-hr. during January.

W. L. Abbott Is Chairman of Federated Engineers Coal Survey Committee

W. L. Abbott, of Chicago, has been appointed chairman of a committee to make a nationwide coal storage survey in co-operation with the U. S. Coal Commission and the Department of Commerce, according to an announcement by the Federated American Engineering Societies. Other members of the committee will be named in the near future. It is probable that the personnel will represent many groups, including coal mining, both bituminous and anthracite; transportation, public utilities, U. S. Bureau of Mines, chemical engineering, economics and equipment. It is proposed to complete the survey by Nov. 1 of this year.

Mr. Abbott is a member of the American Institute of Electrical Engineers and has been a leader in the engineering movement for government reorganization sponsored by the National Public Works Department Association.

Anthracite Operators Brand 1922 Strike as Hold-Up In Flagrant Violation of Anti-Trust Laws

Unless some remedy can be found "whereby force can be dethroned and reason recognized as ruler," anthracite operators contend in a brief filed with the Federal Coal Commission and made public April 16, there is "no salvation for the anthracite industry."

After reciting in detail the events leading up to the strike of 1922 the statement, signed by Walter Gordon Merritt, counsel for the operators, asserts that "this national hold-up, by refusing to negotiate with willing union operators with whom there was no dispute, by disrupting non-union operations, by avoiding an anthracite settlement, by flouting the President of the United States, and by refusing to arbitrate, had for its purpose the attainment of its ends by ruthlessly inflicting injury on the public, in flagrant violation of the federal Anti-Trust laws.

"The refusal to permit resumption of coal production by the producers of 90 per cent of the nation's coal supply, on any terms within the reach of the parties, was not to bring pressure on these producers to grant more concessions but to starve the public into submission through a protracted coal famine.

"The purpose to extend the power of the United Mine Workers by international combinations to deprive the American people of coal is clear if the report from London under date of April 12, 1923, is true, that President Lewis has offered a resolution before the Executive Committee of the International Federation of Miners declaring 'in case of strike all means should be taken to prevent export of coal to the country involved in strike.'

"Throughout the trying days of 1922 the operators were fighting for the principle of settlement by reason, and the mine workers were fighting for a settlement by force. The operators stood for arbitration in an industry of great public importance. The miners stood for coercion by public privation. In the end the demands of a frightened public, supported by the urgings of public officials, led to a sacrifice of the principle in order that the public might have coal.

"Unless that chapter of history can be reversed, unless the commission can find some remedy whereby force can be dethroned and reason recognized as ruler, there is no salvation for the anthracite industry. Nearly all other questions are subordinate to this. It is not as a wage-adjusting body that this commission can best serve its country but in establishing durable and workable machinery for the adjustment of peaceful methods of all differences that may hereafter arise and the elimination of industrial warfare.

"The strike is a legitimate weapon to drive an economic bargain with a selfish employer, but there is no moral right, and should be no legal right, to organize strikes or lockouts in basic industries or transportation where disinterested agencies for adjustment and adjudication are available.

"A national combination, controlling coal production, whether it be of employers or employees, which disregards the public interest and wilfully seeks to produce a coal famine by refusing to arbitrate industrial disputes, deserves correction and regulation at the hands of government. A government which is unafraid can do no less than meet this issue. If society has a right to protect itself against abuses in the coal industry, here is occasion to act. If this major problem goes unremedied, there is no consistency in proposing remedies for minor problems."

Mining Maps Need Not Be Shown to So Called Experts for Boosting Tax Valuations

Judges Strouss and Lloyd, in the Common Pleas Court of Northumberland County, Pennsylvania, have concurred in an important decision, ruling that mining maps do not have to be shown to alleged "experts" engaged by County Commissioners for the purpose of boosting coal-land valuations.

This is said to be the first clear-cut decision rendered on this particular issue. The inference which an outsider would draw from the whole proceeding is that the "experts" merely guessed at coal-land values, and then tried to compel their prospective victims to furnish information whereby they could bolster or correct their findings, or slide out gracefully, as the case might be.

As the decision of Judges Strouss and Lloyd is likely to serve as a precedent in similar anthracite tax proceedings, and in particular seems likely to cut some figure when the tax appeals come up soon in Schuylkill County, the complete opinion, rendered in the action of the Philadelphia & Reading Coal & Iron Co. vs. Commissioners of Northumberland County, is given herewith:

"This proceeding is before us at this time upon a petition and rule to show cause why an order should not be made permitting the Commissioners of Northumberland County by their counsel and engineers to have access to the records and the mines of the plaintiff company. The rule has its inception in an appeal from the action of the Board of Revision in assessing the real estate of the plaintiff company for taxable purposes. The rule has been pending for some time and when called for argument in open court, counsel for the Commissioners of Northumberland County appeared and there stated that they had no desire to have the rule prosecuted so far as the same related to the permission of their experts and engineers to examine the mines. The only question remaining for our disposition is whether or not an order should be made requiring the plaintiff company, being the appellant in said tax appeals. to produce its records, maps and other data for examination by the defendants prior to the trial. The cases of Happersett vs, Eaton, 20 D R 501; Graham vs. Cummings, 11 D.R. 68, are on all fours with the instant proceeding and the rule established by these cases and the authorities cited therein are controlling. The discussion in those cases are exhaustive, pertinent and illuminating to our present inquiry. Nothing could be gained by further elaboration thereon, and from the rule established therein we are of the opinion that we have no power to award the order as prayed for in said rule. And now, to wit, March 26, 1923, said rule is hereby discharged."

McNeil Coal Co. is Low Bidder on Coal For New Haven Railroad

The McNeil Coal Co., with offices at 342 Madison Avenue, New York City, was the lowest bidder for furnishing and delivering to the New York, New Haven & Hartford Railroad Co. 250,000 tons of bituminous coal for the eleven months period May 1, 1923, to April 1, 1924. The prices submitted by the company were $5.93 per gross ton on Fairmont coal and $6.04 on Kanawha coal for delivery alongside the railroad company's docks at Boston and Providence. The price at the mine is thus indicated at about $2.25 per net ton. The bids were not based on assigned cars.

Other bids reported were as follows: New England Coal & Coke Co., Kanawha, $6.95, and Fairmont, $6.49; C. H. Sprague & Son, Kanawha, $7.14; Steamship Fuel Co., Kanawha, $7.20; Consolidation Coal Co., Fairmont, $6.32, and Prudential Coal Co., Kanawha, $6.83.

The New Haven company will receive bids up to noon April 26 for furnishing and delivering approximately 17,000 tons of run of oven coke during the period May 1, 1923 to May 1, 1924.

National Guard Officers "Pass the Buck" For Not Stopping Herrin Massacre

Adjutant General Carlos Black, of the Illinois National Guard, blames Colonel Sam Hunter for the failure of the state to send troops to Herrin last June to stop the Herrin massacre. Colonel Sam Hunter blames Adjutant General Carlos Black. This official wrangle is going on before a special committee of the Illinois Legislature appointed to find out who is responsible for the inactivity of the state troops on those troubled days in June when a union mob besieged a non-union strip mine guarded by 26 hired armed men, accepted the surrender of 48 men and then brutally killed 22.

Colonel Hunter, who went to Herrin four days before the riot, has sworn that he repeatedly asked Adjutant General Black to send two companies of troops, even though Sheriff Melvin Thaxton declined to ask for them. He also declares that State's Attorney Delos Duty and County Judge D. T. Hartwell both refused to ask for troops, though he holds each had the authority. Duty is the man who has handled the two futile prosecutions of men indicted for murder at the massacre and Judge Hartwell heard both cases. Both juries acquitted the defendants and State's Attorney Duty said it was useless for the state to prosecute further and *nolle prossed* all the other murder indictments two weeks ago. Attorney General Edward J. Brundage went through the formality of filing a protest against dropping the cases.

Adjutant General Black has told the investigating committee that Colonel Hunter's testimony is "incorrect in some details." Most of these "details" are the vital ones in the matter. Colonel Hunter has been able, however, to present copies of telegrams and some other documentary evidence to substantiate his statements. He is slated for separation from the Nation Guard payroll on July 1 next. Adjutant General Black has been unable to explain to the committee why, if Colonel Hunter was so derelict in his duty last June, his discharge from the service was not arranged until recently, when it became evident that the Legislature was going to investigate.

Hoover Asks Aid of Trade Associations to Improve Efficiency of Railroads

In a letter addressed to approximately 3,500 trade associations Secretary Hoover asks for co-operation with the railway managers of the country in an effort to obtain the most efficient operation of the railroads. He points out that, due to the war and to the long-continued inability of the carriers to finance the necessary betterments, both productive capacity and consuming demands have now advanced beyond our transportation facilities.

The Secretary of Commerce goes on to state that while railway managers are making every effort in finance and expansion of facilities to meet the nation's necessities, full recovery of lost ground must be slow and he adds that if our present rate of productivity and employment is to be maintained it is vitally necessary that there be co-operation with the railway managements of both producing and consuming industries to assure the most efficient operation of the railroads. The principal direction in which such co-operation can be extended by the trades, according to Secretary Hoover, are: (1) Storage of their winter coal during the light-consuming season—that is, from now until Sept, 1, including the early movement of Lake traffic. (2) The loading of all cars to full capacity, and their prompt loading and discharge. (3) Reduction of reconsignment shipments and restriction of to-order bills of lading. (4) Demands for no more cars from the railways than can be promptly used.

"If we could secure the maximum efficiency in these directions," said the Secretary, "we will have added more effective commodity movement than would be brought about by the addition of 300,000 cars and 3,000 locomotives, and the addition of 10 per cent to our track mileage and terminal facilities.

"The importance of this lies in more than simply the maintenance of continuity of production and full supply of consumption because any strangulation in movement of commodities through car shortages affects the profits of every individual manufacturer by interruption in his production, and furthermore, such strangulation affects price levels in the most definite fashion.

"The full and smooth movement of all of the productivity of the country would be the greatest contribution that could be made at the present time in checking inflation or increase in price levels."

Railroads to Adopt Rating Plan in Illinois Whether Operators Agree or Not

The old order in rating Illinois coal mines for daily car allotment is changing. The principal coal-carrying railroads in that state, havng struggled for two months to get the operators to agree to their plan for rating mines by a railroad board, are on the point of putting the plan into effect. The operators tentatively accepted the plan but upon a condition which would require the Interstate Commerce Commission to render a decision on the assigned-car case after the new plan has had a 60-day trial. This is not acceptable to the roads.

States adjoining Illinois have already come to agreement with the roads. In western Kentucky the mine owners agree to abide by whatever rating the various roads put upon the mines provided they are not handicapped by whatever may take place on the same roads running across the river into southern Illinois. In Indiana the round-robin system of car distribution continues in effect with railroads fixing each mine's rating. The Big Four across southern Illinois has been working a round-robin plan for some time.

But in most of the fields of Illinois the old system, to which both the carriers and some of the mine owners object, remains in operation. A change may be expected at once. Under this old plan each mine gets its daily rating for each month based upon the average of each eight hours' production during the previous month, the operation reports to be made by the operator. There have been many abuses and a good deal of resultant discrimination as between districts.

Under the plan proposed by the road a railroad board will rate each mine arbitrarily, with mines under development getting special ratings, as now provided, and mine hours (not tipple time) will be the time basis. Reports are to be furnished monthly to the roads by the operators. If any operator persistently fails to do so, he can be penalized one-fourth of a week's allotment of cars. Joint mines will have to furnish the report to each road serving them.

The operators, through their traffic bureaus, by letter "tentatively accepted" the plan "with the understanding that the Interstate Commerce Commission will withhold its decision in case Docket No. 12530 in so far as that case applies to the rating of coal mines in the State of Illinois, and with the further understanding that if the operation of these rules during the first 60 days of the next car-shortage period does not result in an equitable distribution of coal-car equipment, as provided by the Act to Regulate Commerce and the decisions of the Interstate Commerce Commission, in the judgment of the operators, the Interstate Commerce Commission will render a decision immediately upon request of the Illinois operators on the evidence already submitted . . . and prescribe just and reasonable rules for rating coal mines." Docket 12530 is the now famous assigned-car case.

The position of most Illinois carriers is that they cannot make any agreement that binds the Interstate Commerce Commission or anybody else. Therefore it is expected the Illinois Central, the Burlington, C. & E. I. and one or two other of the principal coal carriers will put their rating plan into effect at once without any signed agreement.

FIELD INVESTIGATIONS into the question of community storage, studies in which subject are being made by F. R. Wadleigh, Federal Fuel Distributor, have been completed in Minneapolis and St. Paul, Mr. Wadleigh announced April 13. Similar field investigations are being made by E. A. Blake, G. S. Pope and G. J. Pride, in Chicago, Detroit, Buffalo, Worcester, Indianapolis and Cleveland.

Coal Commission Seeks Means to Curb Royalty Demands of Owners of Anthracite Lands

BY PAUL WOOTON
Washington Correspondent of *Coal Age*

How under the laws of Pennsylvania, or by interference on the part of the federal government, can a curb be placed on the royalties demanded by those holding anthracite lands? This is a question which is uppermost in the minds of the members of the President's Coal Commission, now that they are concentrating much of their attention on the anthracite industry. Governor Marshall declared on Saturday that he would like very much to hear from anyone who has a sound idea as to how the land owners can be prevented from charging royalties which "they jolly well please." At that point Chairman Hammond interposed to say that he would put it stronger and say "what they damn please." It was stated at the Saturday conference that this question of meeting the royalty situation will be put to Senator Pepper and to every other person appearing before the commission who is likely to have an opinion on the subject.

All of the members of the commission, with the exception of Governor Marshall, will spend most of this week in the anthracite region. The commission will be accompanied by D. C. Ashmead and another of its anthracite specialists. Mr. Ashmead recently resigned from the editorial staff of *Coal Age* to engage in field work for the commission.

MUCH EVIDENCE AT PUBLIC HEARINGS IRRELEVANT

During the Saturday conference Governor Marshall went into detail in explaining why the commission will limit its public hearings. He stated that during the eight years that he was president of the Senate it was his observation that 75 per cent of the so-called evidence taken during public hearings was not pertinent and that the public money expended to print it was wasted. There will be public hearings, he said, but only on matters concerning which agreement as to the facts cannot be reached in any other manner.

He pointed out that the assembly of the contending parties to a controversy, each supported by smart lawyers, and where the main purpose is to put the other side in a hole, is not likely to bring out the real facts from which conclusions may be drawn. Governor Marshall said that he was disgusted with the way the testimony before the Kenyon committee was jumbled up by the lawyers. In such public hearings as the Coal Commission conducts, he stated, the text will be the exact fact in controversy and witnesses will be required to confine their remarks to that text. Moreover, he declared that the public hearings will be conducted along the lines of a lawsuit. No one will be heard until sworn.

The receipt of a 25-page letter from a woman residing at Herrin, Ill., appealing to the commission for relief on the ground that her husband had been discharged from his position because he served on the grand jury that considered the case against the rioters was cited by Governor Marshall as being typical of a general misconception that has grown out of the request of the commission for information as to breaches of civil rights of American citizens.

"The purpose of the commission in calling for information on the subject," said Governor Marshall, "is to get the evidence of these violations of law so that the principle can be stated and so that a determination can be reached as to whether or not the principle has been violated. Many unwittingly have conceived the idea that the commission is an organization which can assume the rôle of prosecuting attorney, grand jury, petit jury and sheriff, as the case may be, and that it has the authority to prosecute criminal causes and assist in the bringing of civil actions for damages.

"These are not functions of the commission. The courts are the places to prosecute criminal cases and claims for damages. The scope of the commission's work is limited to the ascertaining of the facts as to what are the civil rights of an American citizen, the breaches that have taken place, and to recommend legislation, if that be necessary, or other methods looking to a cure. The commission cannot bring prosecutions or furnish attorneys. All it can do is to make an honest endeavor to get the truth."

The fact that the act gives an immunity bath to those who testify before the commission is regarded by Governor Marshall as being helpful in that he believes that persons appearing before the commission are more likely to be entirely frank when there is no fear of being indicted for what they say.

The commission is face to face with the question as to whether unlimited and uncontrolled competition will result in cheaper coal to the consumer, Governor Marshall said, or whether that end can be attained better if controlled combinations are allowed. Conclusions, however, must await the time when all the facts are in, he asserted. In so far as anthracite is concerned, Governor Marshall said that he is "not certain that any cheaper coal has become available because of any dissolutions that have taken place." For thirty years, he said, there has been constant litigation between the United States and the railroads and mines in the anthracite region.

In Governor Marshall's opinion, the Hepburn Act now meets the full approval of the U. S. Supreme Court. The commission is interested, he said, in having coal furnished the consumer as cheaply as is consistent with fair returns to owners and legitimate investors; with wages to the men who do the actual work commensurate with the American idea of living conditions, and with reasonable freight rates. The commission wants to ascertain by what plan greatest economy can be effected in the mining, the transportation and the distribution of coal and which will insure to the consumer the proportionate part of those economies to which he is entitled. To these aims was added that of assuring an adequate supply of coal to meet the needs of the country.

TO STUDY MINING METHODS AND ENGINEERING PROBLEMS

The commission has advanced far enough with its compilation of facts as to the earnings of the anthracite producers to lead its members to believe that more absolute information in that particular will be available than has been compiled in any other industry. Those members of the commission who will visit the anthracite field will start their inspection visit at Scranton and will proceed through the Wyoming, Lehigh and Schuylkill districts. Mining methods and engineering problems will be studied particularly.

Chairman Hammond announced Saturday that the commission has received about twenty per cent of the 2,400 schedules covering wage rates that had gone out a month previous. Detailed reports on earnings covering 200,000 employees have been received. Early in the week beginning April 9 the commission's staff numbered 410. This is believed to have been the maximum number that it will be necessary to employ. On Saturday the total had fallen to 402, and it is believed there will be a gradual decrease in personnel from this time forward.

The specialists of the Public Health Service now are engaged in the Logan County and the Kanawha fields. The causes of strikes are being studied by a field force of fourteen men, who are making daily reports that are being analyzed at the commission's offices as they are received.

The schedules covering wholesaling and retailing of coal are practically complete and will be mailed out soon.

Prof. J. H. Hollander, of Johns Hopkins University, has been retained by the commission to make a special study of investments, profits and corporate control in the anthracite industry. Professor Hollander is an economist who has had wide experience in financial matters. As Treasurer of

Porto Rico, he organized the Treasury Department of the island and introduced its present revenue system. He was special commissioner to Santa Domingo in 1905 and was largely instrumental in readjusting its public debt.

Among those appearing before the commission last week were General Goethals and W. Thorneycroft. General Goethals pointed out the inefficiency of existing law in the handling of the coal situation in time of emergency. He urged the enactment of a law with teeth, which could be invoked if the situation should require it. In his opinion, the situation should be handled by an administrator who would have wide powers that would supersede those of any other government agency.

Mr. Thorneycroft conducts extensive coal operations in Great Britain. He informed the commission as to the practical working out of the profit-sharing arrangement now in force in the British Isles.

The Bureau of Mines has advised the Coal Commission that it will furnish it with a digest of certain state legislation affecting coal.

Grand Jury Indicts 32 in Connection With Armed March in Logan

Harold W. Houston, of Charleston, chief counsel of the United Mine Workers of District 17, and thirty-one others were indicted by a grand jury in Logan County on April 13, charged with being implicated in the armed march against Logan. Houston is specifically charged with being an accessory before the fact in the death of John Gore and three other deputies of Logan County during the march. No indictment was returned against C. F. Keeney, president of District 17, although there had been rumors that the grand jury might be asked to reindict him.

When the true bill was returned against Houston, who has had a leading part in the defense of others alleged to have been connected with the armed march, he was absent from the city preparing for the trials which were set to be called at Charles-Town on April 16. Houston's name had frequently been mentioned in connection with testimony given at previous trials growing out of the trouble on the Logan border. It was stated on April 14 by T. C. Townsend, of Charleston, associated with Houston in the trial of the miners, that the chief counsel of the mine workers would voluntarily surrender upon his return to Charleston.

Among the others indicted were Elmer Blankenship, against whom indictments are already pending; G. C. Hickey, recently released on bail by the West Virginia Supreme Court; Henry Wright, Bert Castle, U. S. Cantley, J. E. Miller, Ed Kay, Anthony Ness, S. S. McDaniels, Anderson Fauber, William Danaway, A. C. McCormick, George Garrison, Frank Adkins, Walter Regner, Ralph Legg, Will Singleton, George Mathell, a man named Childreen and another man named Irons.

Failure of the jury to reindict Keeney and Fred Mooney, district secretary of the union, does not mean that charges against them will be dropped, according to Prosecutor John Chafin. Keeney, he said, will be tried later under an old indictment charging him with being accessory to murder.

Strike Wanes in Kanawha Field

Although about 2,000 coal miners in the Kanawha field struck April 1, before the end of the week the number of miners on strike had been reduced to 825 in all as additional companies entered into a contract with the miners' union for the new coal year. Contracts had been signed covering about 70 mines, the new agreements being between individual mining companies and the United Mine Workers rather than between the miners' union and the Kanawha Operators Association as a whole, as some of the companies which signed the Cleveland pact withdrew from the association after becoming parties to the union agreement.

Approximately 50 coal companies, producing about 30 per cent of the tonnage in field, have signed the new agreement. The remaining companies in the field have not signed with the union and have indicated that they will not do so.

New York Mayor Submits Eight Queries to Dealers in Coal Investigation

Wholesale and retail coal dealers in New York City have received from John F. Hylan, Mayor, a questionnaire relating to their business, which they are requested to fill out and return to the Mayor's office not later than April 23.

The replies are to be used by the Mayor in his investigation of the Coal situation which he proposes to make in an effort to avoid a recurrence of last winter's shortage of fuel. Some replies, it was said, have already been received, but nothing could be learned as to what they disclosed.

The questionnaire contains eight queries, as follows:

How many tons of anthracite did you sell in New York City between April 1, 1922, and April 1, 1923?

How many tons of bituminous coal did you sell in New York City between April 1, 1922, and April 1, 1923?

What was the range of sales prices per ton between April 1 and Sept. 1, 1922, on anthracite and on bituminous coal?

Between Sept. 1, 1922 and April 1, 1923, on anthracite and on bituminous coal?

What proportion of anthracite did you sell directly to householders and what proportion to dealers?

What proportion of bituminous coal did you sell to householders (apartment houses, private houses, etc.), and what proportion for commercial use (factories, etc.)?

How many tons of anthracite did you sell in New York City during the twelve months previous?

How many tons of bituminous coal did you sell in New York City during the twelve months previous?

Between what range of prices?

Another questionnaire, for large users of coal, also was sent out, in which they were asked how many tons of anthracite and bituminous coal they used, the prices paid, by whom supplied, what proportion of hard and soft coal was used in previous years, the effect of the use of soft coal on boilers, on property and on the neighborhood, and what the user is doing to insure an adequate supply of hard coal during the ensuing twelve months.

Mayor Hylan asks that the answers to this questionnaire be mailed to him before April 30.

Having Licked All Comers Jack Dempsey, Now Will Try Running Utah Coal Mine

"If there is one thing I know more about than fighting, it's how to mine coal" are the words with which Jack Dempsey, heavyweight prizefighter of the world, astonished the world April 10. Whereupon it was officially announced at a meeting in Salt Lake City of directors of the Great Western Coal Mines Co., that William H. Dempsey (that's the rock crusher's home-grown name) had been elected president of the company and that John L. Kearns, the champion's manager, is now secretary and treasurer. Dempsey and Kearns have invested an unannounced amount of their cash in the company and will begin within six months to mine coal from their 2,000-acre tract in Carbon County, Utah. They also say they have taken over 6,000 acres of agricultural land in Castle valley, near by. A new townsite called Dempsey City is to be laid out and possibly populated. Dempsey said "If I ever fight again, that's where I'll train."

Class 1 Railroads Consume 10,358,000 Tons Of Coal in January at $3.75 per Ton

Class 1 railroads consumed 10,358,000 net tons of coal during January, 1923, as charged to account 394, compared with 10,127,000 tons in December and 8,121,000 tons in January, 1922, according to a recent report of the Bureau of Statistics of the Interstate Commerce Commission covering 176 steam roads. The delivered cost per ton in January last was $3.75 compared with $3.60 for the corresponding month of last year.

Consumption of fuel oil in January totaled 150,317,000 gallons, compared with 157,380,000 gallons in December and 126,796,000 gallons in January a year ago.

N. C. A. Directors and Smokeless Operators Pledge Aid To Coal Commission; Labor Evils Outlined

That the U. S. Coal Commission will be given all possible assistance in its work by the bituminous coal operators was assured by the directors of the National Coal Association and by the Smokeless Coal Operators' Association of West Virginia at meetings in New York City on April 11 and 12.

Both bodies received the report of the April 10 meeting of the Bituminous Operators' Special Committee, of which John C. Brydon, of Somerset, Pa., is chairman. The report outlined four major obstacles to satisfactory bituminous-coal mining from the standpoint of the public and the industry and for which solutions will be recommended to the Coal Commission. These evils, the report says, are:

"(1) Instability of labor conditions, due to the monopolistic power and methods of the United Mine Workers of America, with the following consequent handicaps to the industry:

"(a) Inability of mine owners to lay plans even a year ahead with any certainty of regular operation.

"(b) Inability on the part of the industry to make maximum use through steady shipments of the transportation facilities of the country.

"(c) High costs of mining, resulting in high prices, due to constantly interrupted and therefore uneconomic operations and to property losses through violence.

"(d) Exorbitant labor costs, causing prices which force other working people in effect to exchange from two to four days' labor for one day of mining labor when they buy coal.

"(e) Continual threats of even higher wage demands, to be enforced by bludgeoning and violence.

"(2) Transportation difficulties. These constitute an obvious and fundamental deterrent to satisfactory supply and price of coal. Problems of car shortage and suggestions for improving the present system of car distribution are being studied.

"(3) Seasonal demand. A determined and thorough effort by the industry to encourage and teach the storage of coal is certain to be one of the committee's recommendations.

"(4) Speculation. Out of the evils listed above grows destructive opportunity for the industry's barnacles, the speculators who, and those mines which, lie idle when supply is normal and strive for 'killings' when demand is hot and prices high. The great body of constructive business citizens who constitute the bulk of the bituminous mining industry are as desirous as the public itself to so stabilize the industry as to stamp out the speculator."

The report was discussed at length by the directors of the National Coal Association on April 11, at the conclusion of which Alfred M. Ogle, president of the association, said that it was necessary that the misunderstandings existing between the public and operators be gotten rid of. He said it was intended to start an educational campaign with that idea in view and that the special committee of which Mr. Brydon is chairman would have offices in Washington, from which place statements would be issued from time to time.

The Smokeless Operators' Association of West Virginia at a meeting held the next day also received the report of the special committee of operators and pledged its assistance to the Coal Commission. At the luncheon following the meeting Harry L. Gandy, the recently selected executive secretary of the National Coal Association, spoke briefly asking the co-operation of the members of the association in his work.

To assist Mr. Brydon's committee in its work of obtaining information needed, the following were appointed:

D. C. Botting, of Washington; Moroni Heiner, Utah; W. F. Megeath, Montana; P. J. Quealy, Wyoming; G. F. Bartlett, Colorado; J. G. Puterbaugh, Ira Clemens and W. L. A. Johnson, Southwest; E. C. Smith, Iowa; George B. Harrington and F. C. Honnold, Illinois; P. H. Penna, David Ingle, M. L. Gould and J. B. Pauley, Indiana; George H. Barker, W. D. McKinney, D. F. Hurd and S. H. Robbins, Ohio; S. Pemberton Hutchinson, Julian B. Huff and W. M. Henderson, western Pennsylvania; B. M. Clark and G. Dawson Coleman, central Pennsylvania; C. E. Reed, C. F. Richardson, Frank D. Rash, John Price and E. L. Douglass, Kentucky; R. E. Howe, E. C. Mahan, E. R. Clayton and Alex. Bonnyman, Tennessee; S. L. Yerkes, Alabama; E. E. White, R. H. Gross, C. C. Dickinson, Frank Lyon and Oscar Deyerle, West Virginia; C. E. Bockus, Virginia, and J. S. Brophy, Maryland.

U. S. Chamber of Commerce to Discuss Coal Problem at Annual Meeting

The coal problem will take up the entire session of the Natural Resources Production group at the eleventh annual meeting of the Chamber of Commerce of the United States in New York, May 7-11. Details of the group meeting program, announced by W. DuB. Brookings, manager of the Natural Resources Production Department of the National Chamber, indicate that three aspects of the coal situation will be covered in the addresses scheduled to precede the general discussions. The program follows:

"Some Problems of Coal Distribution," by J. D. A. Morrow, president, Morrow Callahan Coal Co.

"Labor and Its Relation to the Cost of Industrial Coal," by J. G. Bradley, president, Elk River Coal & Lumber Co.

"Economic vs. Legislative Solution of the Coal Problem," by George H. Cushing.

"Distribution is one of the most important elements in the entire coal problem," Mr. Brookings said in making the announcement. Mr. Morrow is admirably fitted to speak on this subject. During several years of active management of the affairs of the National Coal Association, he became familiar with the problems of distribution from the point of view of the operator. During the war and afterward he rendered valuable assistance to government officials in charge of the distribution of the nation's fuel."

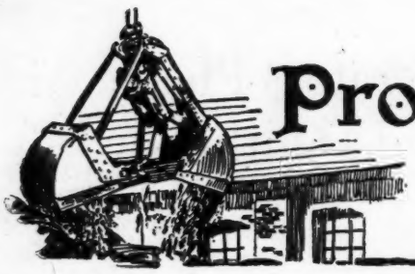
"The second subject to be presented for discussion, that of 'Labor and Its Relation to the Cost of Industrial Coal,' is obviously of vital interest to the manufacturer. As an operator for many years in the non-union fields and as past president of the National Coal Association, Mr. Bradley has a background which well qualifies him to handle this subject."

"The third subject, 'Economic vs. Legislative Solution of the Coal Problem,' presents an opportunity for the broadest sort of discussion. Mr. Cushing has been a student of coal for many years and is conceded to be one of the best speakers among coal men and one of the most original thinkers on the coal problem."

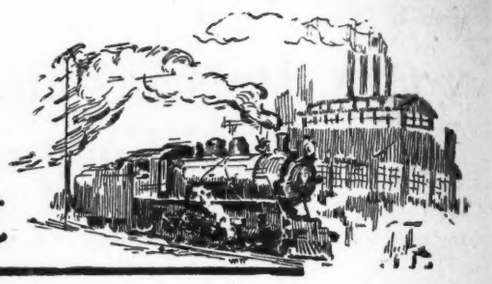
Coal-Investigation Bill Presented in New York Legislature

Albany, N. Y., April 16.—A bill creating a commission to investigate the production, transportation, distribution and prices of coal, and making an appropriation of $25,000 therefor, was introduced in the New York Legislature today by Assemblyman W. W. Campbell, of Schenectady.

The measure provides that the commission "shall investigate the quantity and kind of coal presently available and to be available in the future for the use of the people and industries of this state, the estimated amount of coal, of the several sizes and kinds, to be required for such use, and all matters and transactions affecting the production, transportation and distribution of coal for use in this state and tending to inflate the prices thereof, together with ways and means to prevent shortage of coal and excessive prices, to the end that the state, by remedial legislation, recommendations to Congress and otherwise, may take such measures that hereafter there may be a permanent and adequate supply of coal equitably distributed at reasonable prices."



Production and the Market



Weekly Review

Despite the general dullness of the soft-coal market, April so far has been exceptional in the steadiness of price and the quantity of output. Production continues at the rate of 10,500,000 tons per week, even though stocks at the end of the coal year were high for an off-strike year. Some indication of where the coal is going is found in the figures of coal used in coke manufacturing. In March nearly 7,500,000 tons of soft coal were used in the production of coke, both beehive and byproduct, as compared with an average per month in 1922 of 4,500,000 tons of coal. Railroads are consuming some 500,000 tons of coal per week more than a year ago and public utilities are consuming over 3,500,000 tons per month—some 500,000 tons more than in early 1922. Thus the largest users—the railroads, the iron and steel industry and public utilities—are taking more than half the current output of soft coal. There is no excitement in the trade, for this coal is moving forward quietly on current orders and more and more is being tied up on contracts. Kanawha and Fairmont coals have been offered without assigned cars on a basis of about $2.25 per net ton at the mines on railroad contract business.

Price Index Registers Slight Increase

The general status of the soft-coal market remained about the same as last week. *Coal Age* Index on Monday, April 16, was 235, as compared with 233 the previous week, the corresponding average price being $2.84. Price increases in Pocahontas, western Kentucky, eastern Ohio, Pittsburgh and Clearfield sections were offset by declines in southern Illinois, eastern Kentucky, Hocking, Cambria and Somerset.

Production for the week ended April 14 is estimated at 10,500,000 tons. Cumulative production in the calendar year to April 7 was 148,867,000 net tons, an increase of 15,744,000 tons over 1922 and 39,579,000 tons over 1921.

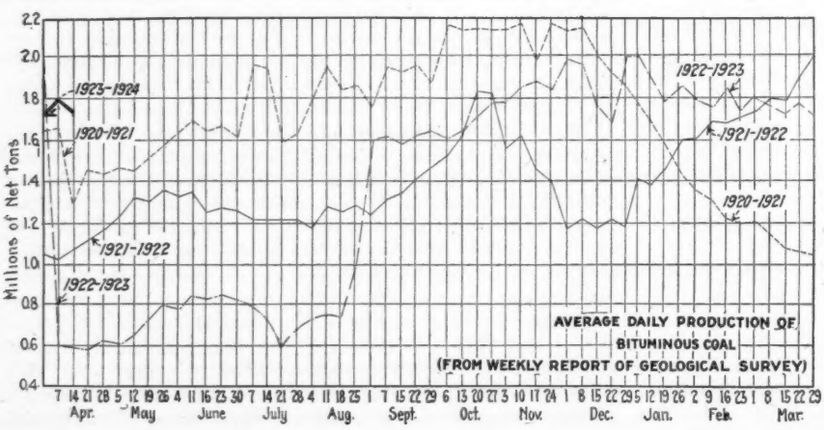
Lack of cars continues to be the principal factor limiting production in many fields, notably in the East. Since the first of the month the roads have ceased to give coal the preference in movement afforded during the winter. Total freight movement is at a record level and the share that is going to coal is decreasing. In the West the lack of market has long since been of more importance than cars. In the Middle West hope for summer operation is being pinned to a good market in the Northwest and among retail dealers. Down East and in the South the record rate of industrial activity is taxing railroads and using coal as fast as it is produced.

Little Export Business Being Closed

Export demand for coal continues quiet. There are some inquiries for July delivery, but little if any business is being closed. Italian gas companies last week asked for bids on upward of 30,000 tons of Youghiogheny or Westmoreland gas coal in competition with British coals. Some shipments on regular business were reported as having been made for South American railroads. Demand for coke was easier, one cargo being reported as having been sold for shipment to Belgium. Dumpings at Hampton Roads during the week ended April 12 were 393,848 net tons, as compared with 400,267 tons the previous week.

Buyers are puzzled over the outlook in New England. Production is ample, but rail transportation is causing apprehension. Rail routes are congested and embargoes were in force last week against the New Haven and the Boston & Maine railroads.

The closing of mines in union districts on Eight-Hour Day, April 2, reduced production on that day to about 42 per cent of the average of recent Mondays. The estimated total of coal raised during the week April 2-7 is 9,725,000 net tons, and the indicated daily average output for the week of 5.42 days is 1,794,000



Estimates of Production

(Net Tons)

	1922	1923
BITUMINOUS		
March 24	11,448,000	10,424,000
March 31 (*b*)	10,469,000	10,430,000
April 7 (*a*)	3,835,000	9,725,000
Daily average	639,000	1,794,000
Calendar year	133,123,000	148,867,000
Daily av. cal. year	1,613,000	1,800,000
ANTHRACITE		
March 24	2,095,000	2,126,000
March 31	1,896,000	2,008,000
April 7	9,060	1,602,000
Calendar year	21,786,000	27,470,000
COKE		
March 31 (*b*)	191,000	388,000
April 7 (*a*)	175,000	427,000
Calendar year	1,983,000	5,137,000

(*a*) Subject to revision. (*b*) Revised from last report.

tons. The present week, April 9-14, opened with 38,188 cars loaded on Monday and on each of the next three days loadings were between 30,000 and 31,000 cars. The total output for the week probably will be about 10,500,000 net tons, says the Geological Survey.

Anthracite domestic sizes continue to move in good volume but not sufficiently to enable retail dealers to take care of their customers' orders. The steam sizes are dragging and some producers have found it necessary to offer inducements to keep them moving.

Midwest Conditions Unsatisfactory

Throughout the Midwestern region some domestic coal is still selling, due to chilly weather and also because of the transportation difficulties in getting Pocahontas and other Eastern domestics into Indiana and Illinois. Household trade in coal for next winter has not begun though retailers say there is more interest in "buy now" than there normally it at this time of year.

The middle sizes of Indiana and Illinois coal are dragging badly and choking up the lines with unbilled cars. On its Illinois lines alone the Burlington road during the week carried approximately 1,000 cars a day of no-bills. Most mines in those two states which depend to any extent upon spot market worked two days and numbers of them were shut down for the time being.

In southern Illinois several mines have been idle on account of a strike of the line men with the principal power company. Some mines in the Mt. Olive field have worked but two or three days during the last month. Equipment furnished is hopper-bottom that the country dealer cannot unload, and added to that the price is high, so that business in that field is almost at a standstill. In the Standard field there is little change from last week. The demand is not quite so good and railroad tonnage has fallen off. Car supply has been a little short at some points, but seems to be ample for the demand.

St. Louis Business Is Slow

Warmer weather eased up the domestic demand in the St. Louis market. Deliveries of anthracite became good during the week for the usual spring storage, but it is earlier this year than ordinarily. Wagonload steam has been good, but carload is slow.

Country domestic trade is almost at a standstill and country steam has not responded for the past two or three

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

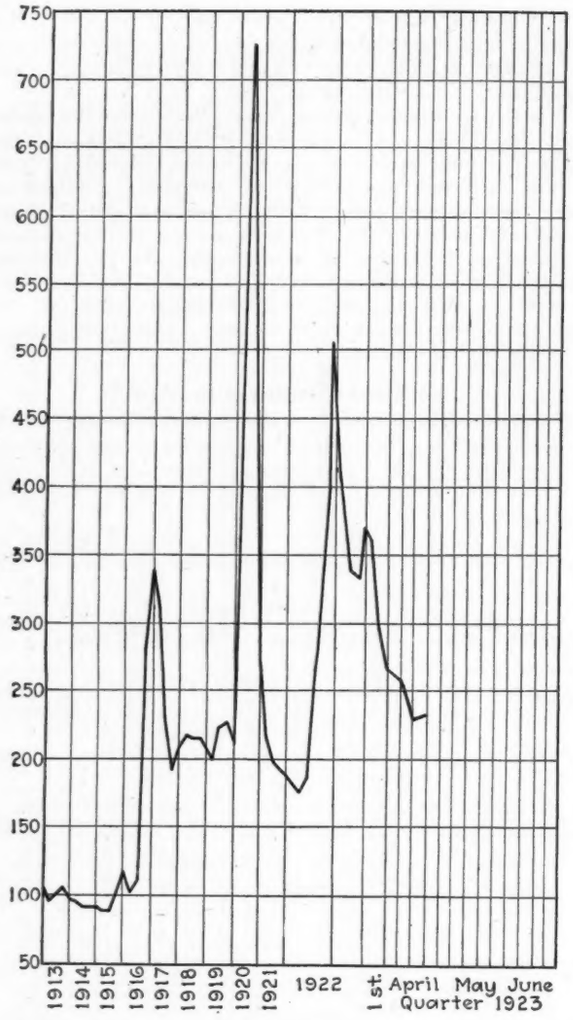
	Market Quoted	Apr. 17 1922	Apr. 2 1923	Apr. 9 1923	Apr. 16 1923†
Low-Volatile, Eastern					
Smokeless lump	Columbus	$2.85	$6.85	$6.25	*$6.00@$6.25*
Smokeless mine run	Columbus	1.90	4.25	4.25	4.00@ 4.50
Smokeless screenings	Columbus	1.40	4.25	3.75	**3.75@ 4.25**
Smokeless lump	Chicago	2.50	6.10	6.10	6.00@ 6.25
Smokeless mine run	Chicago	1.65	3.75	3.75	3.50@ 4.00
Smokeless lump	Cincinnati	2.35	6.25	6.00	**6.25@ 6.50**
Smokeless mine run	Cincinnati	1.70	4.00	3.85	**4.00@ 4.50**
Smokeless screenings	Cincinnati	1.60	3.85	3.85	**4.00@ 4.25**
*Smokeless mine run	Boston	4.75	6.10	6.25	**6.10@ 6.50**
Clearfield mine run	Boston	2.15	3.05	2.90	**2.40@ 3.50**
Cambria mine run	Boston	2.55	3.85	3.75	*3.25@ 4.10*
Somerset mine run	Boston	2.25	3.50	3.35	3.00@ 3.75
Pool 1 (Navy Standard)	New York	3.40	4.10	4.00	3.50@ 4.50
Pool 1 (Navy Standard)	Philadelphia	3.15	4.30	4.10	*3.80@ 4.20*
Pool 1 (Navy Standard)	Baltimore	.....	.....	.....	.....
Pool 9 (Super. Low Vol.)	New York	3.25	3.50	3.35	*3.00@ 3.50*
Pool 9 (Super. Low Vol.)	Philadelphia	2.75	3.50	3.30	*3.00@ 3.50*
Pool 9 (Super. Low Vol.)	Baltimore	.....	3.50	3.25	3.25
Pool 10 (H.Gr.Low Vol.)	New York	2.75	2.90	2.85	*2.35@ 3.00*
Pool 10 (H.Gr.Low Vol.)	Philadelphia	.....	3.00	2.80	*2.45@ 2.85*
Pool 10 (H.Gr.Low Vol.)	Baltimore	.....	3.25	2.90	2.90
Pool 11 (Low Vol.)	New York	2.75	2.50	2.50	*1.90@ 2.75*
Pool 11 (Low Vol.)	Philadelphia	2.25	2.50	2.40	*2.05@ 2.45*
Pool 11 (Low Vol.)	Baltimore	2.75	2.35	2.25	2.25
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	2.90	2.40	2.30	*1.85@ 2.25*
Pool 54-64 (Gas and St.)	Philadelphia	2.15	2.30	.....	*2.10@ 2.35*
Pool 54-64 (Gas and St.)	Baltimore	2.90	2.40	2.25	2.25
Pittsburgh sc'd gas	Pittsburgh	.....	3.35	3.00	**3.00@ 3.25**
Pittsburgh mine run (St.)	Pittsburgh	.....	2.00	2.00	2.00
Pittsburgh slack (Gas)	Pittsburgh	.....	2.25	2.00	**2.50@ 2.60**
Kanawha lump	Columbus	2.30	4.25	4.00	*3.50@ 4.00*
Kanawha mine run	Columbus	1.60	2.75	2.50	*2.00@ 2.50*
Kanawha screenings	Columbus	1.50	2.30	2.35	*2.15@ 2.50*
W. Va. lump	Cincinnati	2.00	3.50	3.60	*3.25@ 3.75*
W. Va. Gas mine run	Cincinnati	1.75	2.75	2.60	*2.25@ 2.50*
W. Va. Steam mine run	Cincinnati	1.90	2.50	2.35	2.25@ 2.50
W. Va. screenings	Cincinnati	1.70	2.10	2.35	*2.00@ 2.35*
Hocking lump	Columbus	2.65	3.50	3.00	2.75@ 3.25
Hocking mine run	Columbus	1.75	2.35	2.10	2.00@ 2.25
Hocking screenings	Columbus	1.50	1.90	1.75	*1.50@ 1.75*
Pitts. No. 8 lump	Cleveland	3.40	2.90	2.90	**2.25@ 3.75**
Pitts. No. 8 mine run	Cleveland	$2.35	$2.25	$2.20	**$2.15@$2.35**
Pitts. No. 8 screenings	Cleveland	2.20	2.00	2.00	*1.85@ 2.05*
Midwest					
Franklin, Ill. lump	Chicago	3.30	3.85	3.85	3.85
Franklin, Ill. mine run	Chicago	2.75	3.10	3.10	3.00@ 3.25
Franklin, Ill. screenings	Chicago	2.75	2.05	2.05	*1.90@ 2.00*
Central, Ill. lump	Chicago	.....	3.10	2.75	2.65@ 2.90
Central, Ill. mine run	Chicago	.....	2.60	2.10	2.00@ 2.25
Central, Ill. screenings	Chicago	.....	1.60	1.60	*1.50@ 1.65*
Ind. 4th Vein lump	Chicago	3.15	3.35	3.35	3.25@ 3.50
Ind. 4th Vein mine run	Chicago	2.50	2.85	2.85	2.75@ 3.00
Ind. 4th Vein screenings	Chicago	2.25	1.85	1.85	1.75@ 2.00
Ind. 5th Vein lump	Chicago	2.60	2.85	2.85	2.75@ 3.00
Ind. 5th Vein mine run	Chicago	2.60	2.10	2.10	2.00@ 2.25
Ind. 5th Vein screenings	Chicago	2.40	1.55	1.55	1.50@ 1.60
Standard lump	St. Louis	.....	2.60	2.50	2.50
Standard mine run	St. Louis	.....	2.10	1.85	1.75@ 2.00
Standard screenings	St. Louis	.....	.95	1.10	1.10
West Ky. lump	Louisville	2.35	2.50	2.50	2.25@ 2.75
West Ky. mine run	Louisville	2.00	1.85	1.85	**2.00@ 2.25**
West Ky. screenings	Louisville	1.90	1.75	1.75	**1.85@ 2.15**
West Ky. lump	Chicago	.....	2.85	2.85	*2.50@ 2.75*
West Ky. mine run	Chicago	.....	1.80	1.80	1.75@ 1.85
South and Southwest					
Big Seam lump	Birmingham	2.00	2.50	2.50	2.50
Big Seam mine run	Birmingham	1.70	2.10	2.10	2.00@ 2.25
Big Seam (washed)	Birmingham	1.85	2.35	2.35	2.25@ 2.50
S. E. Ky. lump	Chicago	.....	3.85	3.85	3.75@ 4.00
S. E. Ky. mine run	Chicago	.....	2.85	2.85	2.75@ 3.00
S. E. Ky. lump	Louisville	2.25	4.25	4.00	*3.50@ 4.25*
S. E. Ky. mine run	Louisville	1.75	2.85	2.80	*2.50@ 3.00*
S. E. Ky. screenings	Louisville	1.55	2.40	2.50	*2.15@ 2.75*
S. E. Ky. lump	Cincinnati	2.15	3.75	3.50	3.25@ 3.75
S. E. Ky. mine run	Cincinnati	1.90	2.60	2.50	*2.00@ 2.50*
S. E. Ky. screenings	Cincinnati	1.65	2.10	2.35	*2.00@ 2.35*
Kansas lump	Kansas City	4.25	4.50	3.85	3.25@ 4.50
Kansas mine run	Kansas City	4.00	3.50	3.25	3.00@ 3.50
Kansas screenings	Kansas City	2.50	2.60	2.60	2.50@ 2.75

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Latest Pre-Strike Independent	Latest Pre-Strike Company	April 9, 1923 Independent	April 9, 1923 Company	April 16, 1923† Independent	April 16, 1923† Company
Broken	New York	$2.34	.....	$7.60@$7.75	.....	$7.75@$8.35	.....	$7.75@$8.35
Broken	Philadelphia	2.39	$7.00@$7.50	7.75@ 7.85	.....	7.90@ 8.10	.....	7.90@ 8.10
Egg	New York	2.34	7.60@ 7.75	7.60@ 7.85	$8.25@$10.00	8.00@ 8.35	**$8.50@$10.50**	8.00@ 8.35
Egg	Philadelphia	2.39	7.25@ 7.75	7.75	9.25@ 9.50	8.10@ 8.35	9.25@ 9.50	8.10@ 8.35
Egg	Chicago*	5.09	7.50	8.25	12.00@12.50	7.20@ 8.25	12.00@12.50	7.20@ 8.25
Stove	New York	2.34	7.90@ 8.20	7.90@ 8.10	8.25@10.00	8.00@ 8.35	**8.50@10.50**	8.00@ 8.35
Stove	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 9.50	8.15@ 8.35	9.25@ 9.50	8.15@ 8.35
Stove	Chicago*	5.09	7.75	8.25	12.00@12.50	7.35@ 8.25	12.00@12.50	7.35@ 8.25
Chestnut	New York	2.34	7.90@ 8.20	7.90@ 8.20	8.25@10.00	8.00@ 8.35	**8.50@10.50**	8.00@ 8.35
Chestnut	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.15	9.25@ 9.50	8.15@ 8.35	9.25@ 9.50	8.15@ 8.35
Chestnut	Chicago*	5.09	7.75	8.25	12.00@12.50	7.35@ 8.35	12.00@12.50	7.35@ 8.35
Ranges	New York	2.34	.....	.....	.....	8.30	.....	8.30
Pea	New York	2.22	5.00@ 5.75	5.75@ 6.45	6.30@ 7.50	6.00@ 6.30	6.30@ 7.50	6.00@ 6.30
Pea	Philadelphia	2.14	5.50@ 6.00	6.10@ 6.25	7.00@ 7.25	6.15@ 6.20	7.00@ 7.25	6.15@ 6.20
Pea	Chicago*	4.79	6.00	6.25	7.00@ 8.00	5.49@ 6.03	7.00@ 8.00	5.49@ 6.03
Buckwheat No. 1	New York	2.22	2.75@ 3.00	3.50	2.50@ 3.25	3.50@ 4.15	**2.50@ 3.50**	3.50@ 4.15
Buckwheat No. 1	Philadelphia	2.14	2.75@ 3.25	3.50	3.50	3.50	3.50	3.50
Rice	New York	2.22	2.00@ 2.50	2.50	2.00@ 2.50	2.50	*1.75@ 2.50*	2.50
Rice	Philadelphia	2.14	2.00@ 2.50	2.50	2.50	2.50	2.50	2.50
Barley	New York	2.22	1.50@ 1.85	1.50	1.25@ 1.50	1.50	1.25@ 1.50	1.50
Barley	Philadelphia	2.14	1.50@ 1.75	1.50	1.50	1.50	1.50	1.50
Birdseye	New York	2.22	.....	2.00@ 2.50	.....	1.60	.....	1.60

*Net tons, f.o.b. mines †Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age Index 235, Week of April 16, 1923. Average spot price for same period $2.84.* This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913, 1918," published by the Geological Survey and the War Industries Board.

weeks. Indications are that there will be a light tonnage of anthracite available of this territory and gas-house and byproduct coke are reported as sold up until June 1.

Louisville Dealers Do Not Stock

Lake movement is slow in development, due to ice, late opening and the fact that the Lake buyers are opposed to paying prices as now quoted. While industrial demand is fair and some retailer demand in sight, the retailers are slow in stocking, as there is practically nothing to warrant an advance in the markets for some weeks to come.

Railroad consumption is heavy and the manufacturers of building supplies are operating at capacity.

Northwest Trade Is Quiet

Shipments from the Duluth docks fell off in March, only 10,826 cars going out. This compares with 13,966 cars in February and 21,249 cars in March last year. The falling off is opportune, as there are only about 700,000 tons of coal on the docks now, of which not more than 300,000 is free. Youghiogheny and Hocking lump were gone entirely as are also Pocahontas lump and mine-run. There is some Pocahontas screenings and a large amount of bituminous screenings left.

Mild weather for a few days lulled the Milwaukee coal market almost to sleep. The dock yards are well cleaned up, but enough coal is coming by rail and carferry to supply all demands. Jobbers are looking forward to a season of keen competition when navigation opens, because operators want to force an early movement of coal.

As Western Markets Sag, Prices Fluctuate

With an almost complete end to the demand for domestic sizes, mines through Kansas, Arkansas, Missouri and Oklahoma are closing rapidly. Few mines are open in Arkansas. Naturally, with such conditions, there is considerable price slashing.

In Colorado the dollar-off spring storage prices are beginning to move both lignite and bituminous to dealers' yards. Bituminous moves at $5 for lump and $4.50 for nut. This is 50c. under the price at this time last year. Good lignite lump goes at $3. Even these comparatively low prices are being undercut $1 in Denver by a little bituminous from Hanna, Wyo.

In Utah the market is soft indeed for everything produced and several mines have shut down. The average working time for the state during the week was 30 per cent. Prices fluctuate wildly.

Smokeless Features Cincinnati Market

The one bright spot in the Cincinnati market is the smokeless coal situation, advances having been scored during the past week on the prepared coals, due to the fact that most of the Pocahontas producers have all the business they can handle. The Lake situation has not cleared up to any appreciable degree, each rumor of sales casting a different complexion on the situation. The premiums that had been asked for byproduct coal have been pretty well wiped out in so far as spot coal is concerned. Nor does there appear to be much inquiry for future supplies or any deals on a contract basis. Rejections were reported as numerous, throwing more coal on the open market.

The chief feature of the Columbus market was weakness in all grades, but more principally in mine-run and prepared sizes. Buying was restricted largely to current needs. Contracting for steam tonnage attracted some attention, but many users have not yet closed up. In the meantime they are using up reserves which were accumulated in the past few months. Business is expected to be dull until the Lake season gets in full swing, which may be much later than was generally expected. A considerable Lake tonnage has been contracted for and prices are said to be generally good.

Surplus Fuel Disappears in Eastern Ohio

During the past week the surplus fuel around Eastern Ohio markets disappeared and there was little or no distress coal about. Demand picked up somewhat and inquiries were received on contract requirements. Contracting has not yet assumed any appreciable proportions because of price differences, and the closing of many contracts is being deferred awaiting stabilization of market conditions. During the week ended April 9 the lower Lake ports dumped 125,000 tons of cargo coal and in addition to this the boats took 10,000 tons of fuel.

In northern West Virginia the railroads have not been offering more than $2 to $2.25 for railroad fuel contracts and many operators have declined to sign at that figure owing to the fact that the Lake season should open soon, and then better prices may be obtained. Tidewater shipments are not so large and coal is being retarded in transit as a result of congestion at Curtis Bay and other piers. Some of the larger companies have their coke output sold up for April and May.

Pittsburgh Steam-Coal Mines Close

In the Pittsburgh district additional steam coal mines are closing, following the closing in the past few weeks of a number of mines in the Connellsville region. Practically no steam-coal contracts have been made for the coal year and only a few gas-coal contracts, but there are regular understandings whereby shipments are made and the price is adjusted at intervals.

There was no improvement noted in the Buffalo situation, though it was reported that there was not so much coal on track as a short while back.

Outlook Puzzles New England Buyers

Buyers in New England are puzzled over the outlook. The rail routes into New England are now heavily congested, available motive power considered, and the first half of April will doubtless show a material drop in receipts at the Hudson River gateways. Embargoes are now in effect against both the New Haven and the Boston & Maine, leaving the Boston & Albany the only line open at this writing.

A few stray cargoes of British coal were still being received for locomotive use, but the trade understands that this source of supply has now diminished to a point where it is practically negligible. There was still congestion at Boston and at Providence, especially at railroad berths, but fewer arrivals probably will be the means of clearing up this particular situation.

There continue to be ample supplies of navy acceptable coal on wheels at the Virginia terminals. Dispatch is excellent, but the spot market suffers from inadequate buying. Prices have not receded quite as expected, but most interests feel the trend is lower.

All-rail territory is being closely canvassed for spot business. Only a small proportion of mines in the central Pennsylvania districts have business ahead and quotations continues to sag. A few high-grade coals are still commanding a range of $3.50@$3.75 per net ton, but even these mines have few orders in hand and are being operated only from week to week.

Better Feeling Pervades New York Market

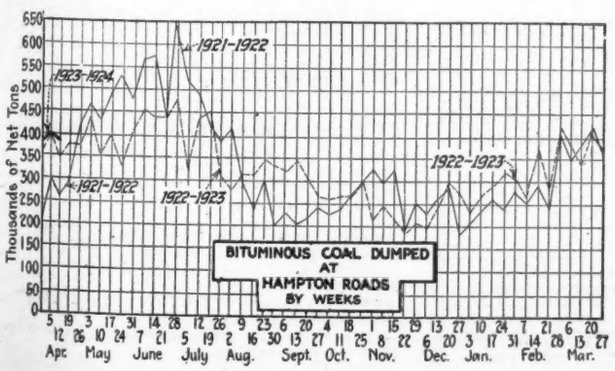
There was a better feeling in the New York market. Inquiries were more frequent, but actual buying was slow. Consumers are more particular as to the quality of coal purchased. The Philadelphia market was extremely draggy. There are no signs of heavy stocks around industrial plants and no amount of urging would induce consumers to take in coal. Some producers look for a decided change for the better about June 1.

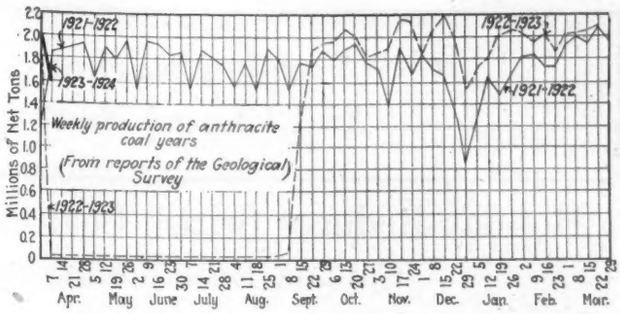
The demand at Baltimore was not heavy and contracts have not been closed in such volume as was hoped for.

The steam trade at Birmingham, Ala., remained quiet. Domestic sizes were in good demand, as the principal producers are pretty well sold up and there is ample spot business offered to take the tonnage above contracts on hand. Production for the week ended March 31 reached 416,000 tons, as reported to the Alabama Mining Institute. The output for the quarter ending with March was 5,017,000 tons.

Demand for Anthracite Continues Strong

Producers have no difficulty in moving their anthracite domestic coals. Demand continues strong and retail dealers could handle larger tonnages. Consumers are anxious to fill their bins for next winter. In the New York market the steam sizes are causing a little trouble, but so far not sufficient to make it necessary to send them to the storage yards. In Philadelphia the most wanted size is chestnut. The Baltimore situation is comparatively easy. During last week more than 250 cars were reported as





received. Consumers are being urged to lay in their next winter's coal.

"The observance of Eight Hour Day—April 2—as a holiday at the anthracite mines," says the Geological Survey, "was responsible for complete suspension of work, and production declined sharply in the week ended April 7. Using as a basis the 30,637 cars reported as being shipped by the anthracite carriers, the total output was estimated at 1,602,000 net tons, a decrease of 20 per cent over the week preceding. This suspension on Monday was not responsible, however, for the entire loss, as shipments did not reach normal until Thursday. The corresponding week in 1922 witnessed the outbreak of the miners' strike and production was but 9,000 tons.

"The cumulative output during 1923 to date now stands at 27,470,000 net tons, an increase over the corresponding period of 1922 of 5,684,000 tons, or 26 per cent."

Coke Production Rebounds

The production of beehive coke during the week ended April 7, says the Geological Survey report, showed a gain of 39,000 net tons over the preceding week, or 427,000 tons as compared with 388,000 tons the previous week. The increase was principally in Pennsylvania and small gains also were shown in the Southern Appalachian region.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Dec. 30, 1922 Inclusive	Jan. 1 to Mar. 31, 1923 Inclusive	Week Ended Mar. 31, 1923
U. S. Total	55 7	....	....	....
Alabama	64.6	84.7	89.0	(a)
Somerset County	74.9	36.3	27.8	33.1
Panhandle, W. Va.	51.3	57.3	55.3	53.8
Westmoreland	58.8	65.8	53.7	49.2
Virginia	59.9	55.7	54.7	61.1
Harlan	54.8	22.1	22.2	23.0
Hazard	58.4	16.4	20.9	30.7
Pocahontas	60.0	36.6	37.9	38.8
Tug River	63.7	28.8	34.8	41.3
Logan	61.1	26.2	31.1	34.2
Cumberland-Piedmont	50.6	31.7	46.7	51.7
Winding Gulf	64.3	30.4	33.9	36.4
Kenova-Thacker	54.3	42.4	32.1	(a)
N. E. Kentucky	47.7	28.4	28.2	(a)
New River	37.9	31.6	35.6	43.1
Oklahoma	59.6	59.1	44.2	53.0
Iowa	78.4	75.9	80.1	92.9
Ohio, Eastern	46.6	40.8	34.8	38.8
Missouri	66.8	76.3	78.1	85.8
Illinois	54.5	49.9	48.2	40.7
Kansas	54.9	55.9	47.6	39.3
Indiana	53.8	37.7	52.7	45.1
Pittsburgh†	39.8	41.2	33.2	37.7
Central Pennsylvania	50.2	53.4	45.3	42.8
Fairmont	44.0	35.5	35.9	33.7
Western Kentucky	37.7	32.4	32.7	31.4
Pittsburgh*	31.9	56.1	59.2	45.0
Kanawha	13.0	15.6	22.6	26.6
Ohio, Southern	24.3	38.1	32.5	29.6

* Rail and river mines combined.
† Rail mines.
(a) No report.

Car Loadings, Surplusages and Shortages

	Cars Loaded All Cars	Cars Loaded Coal Cars
Week ended March 31, 1923	938,725	182,668
Previous week	917,036	185,062
Same week in 1922	821,808	185,521

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortage	
March 28, 1923	14,196	3,785	68,986	29,281
March 21, 1923	12,741	4,111	71,443	29,915
Same date in 1922	206,746	72,566	.....	.....

Foreign Market And Export News

Holiday Reduces British Coal Production; Canada Enters Market

There were 4,874,000 tons of coal produced in Great Britain's mines during the week of March 31, according to a cable to *Coal Age*. The week included Good Friday with in most cases a holiday on the succeeding day, leaving virtually four working days in the week. The previous week's production was 5,703,000 tons.

The Welsh market is exceptionally busy satisfying Continental demand, and for the next two months the mines have heavy orders ahead. The main directions of export continue to be France and Italy, especially the latter, where the current rate of export is creating a record. During the past few days Canada has been asking for substantial quantities of Welsh coal.

Most of the north English mines are booked up until the end of June. Owing to political events in Germany, Belgium, France and Germany are showing less keenness to buy. The German State Railways inquired for 50,000 tons of Northumberland and Durham coal for shipment in April and May.

Coal exports officially reported from London for the weeks ended April 6 and April 13, were, in tons:

	April 6	April 13
South Wales District	32,485	.....
Newcastle (Tyne) district	3,783	1,140
Mersey	6,784	.....
Clyde	.....	4,700

Slight Dullness at Hampton Roads

Reduction in export business, with a slight slump in bunkers, caused dullness in the Hampton Roads market last week. Stocks continued to pile up at the piers, with a consequent drop in prices. The slump was regarded by the trade, however, as temporary.

Shipments to France continued on a small scale, indicating better business of this character later. Some bunker business was obtained for transatlantic vessels which put in here en route from New York, because of the coal handlers' strike there.

Coastwise trade was holding up fairly well. In the domestic trade preparations were being made for the advent of warm weather and the natural decline in business. The tone of the market was only moderately strong.

Export Clearances, Week Ended April 7, 1923

FROM HAMPTON ROADS

	Tons
For Canada:	
Amer. Schr. James M. W. Hall, for Hamilton	826
For Canal Zone:	
Amer. SS. Ancon, for Cristobal	9,800
For Colombia:	
Amer. Schr. Jacob W. Hook, for Cartagena	925
For France:	
Br. SS. Berwindvale, for Dunkirk	7,700
Br. SS. Rothley, for Havre	6,241
For Germany:	
Nor. SS. Aagot, for Emden	5,398

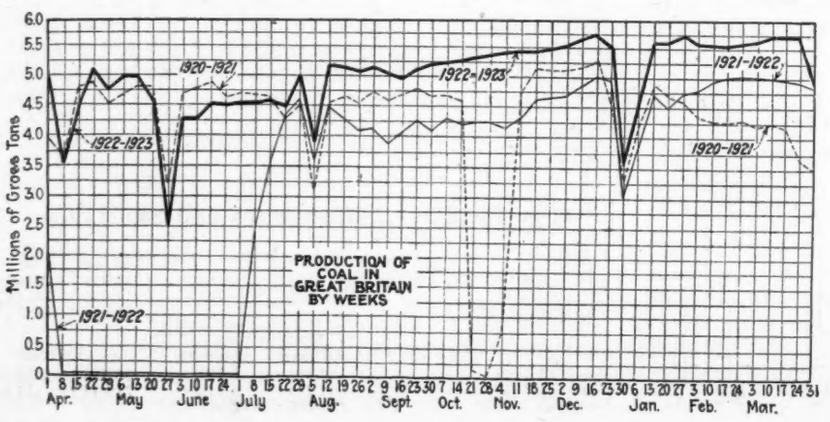
FROM PHILADELPHIA

For Belgium:	
Swed. SS. Kiruna, for Ghent	..
Dutch SS. Helena, for Antwerp (coke)	..
For France:	
Br. SS. Kenilworth, for Dunkirk (coke)	..
Fr. SS. La Perouse, for Dunkirk (coke)	6,124

United States February Coal Exports by Customs Districts

(In Gross Tons)

	Anthracite	Bituminous	Coke
Maine and New Hampshire	1	.....	185
Vermont	1,136	1,419	1,085
St. Lawrence	97,929	150,077	2,811
Rochester	2,767	41,102	1,000
Buffalo	219,233	342,881	39,495
New York	2,561	880	1,226
Philadelphia	6,184	5,468	783
Maryland	.....	6,346	548
Virginia	.....	49,838	.....
South Carolina	.....	7,382	.....
Florida	.....	.....	210
Mobile	.....	446	4,434
New Orleans	1	1,216	572
San Antonio	152	.....	.....
El Paso	20	1,731	1,011
Arizona	3	2,063	4,038
Los Angeles	18	35	.....
San Francisco	.....	447	19
Washington	2	2,204	.....
Dakota	186	8,426	4,013
Duluth and Superior	8	5,347	5
Michigan	150	177,790	9,456
Ohio	.....	866	92
Porto Rico	.....	9	6
Totals	330,351	805,973	70,989



Denmark's 1922 Fuel Importations

There were imported into Denmark during 1922, according to a report received by the Department of Commerce at Washington from Chargé d'Affaires P. L. Cable, 2,839,000 tons of anthracite and briquets as compared with 2,093,000 tons in 1921, and 794,000 tons of coke and cinders, as compared with 469,000 tons in the previous year.

Practically all of the coal imported in 1922 came from Great Britain; Germany supplied about 12,600 tons of anthracite, and the United States 121 tons. In addition to the coal and coke imports there were received into the country 76,000 tons of illuminating paraffin, 52,000 tons of petrol and 75,000 tons of other non-dutiable fuel oil.

United States February Coal Exports

(In Gross Tons)

Coal:	Feb., 1922	Feb., 1923
Anthracite	274,905	330,351
Bituminous	813,587	805,973
Exported to:		
France	3,785	.....
Italy	7,414	9,353
Netherlands	2,537	.....
Other Europe	3,893	.....
Canada	660,796	730,112
Mexico	5,254	4,301
Br. W. Indies	12,994	3,185
Cuba	50,101	55,511
Other W. Indies	437	209
Argentina	4,054	.....
Brazil	16,920	.....
Chile	6,889	.....
Egypt	21,401	.....
Fr. Africa	13,518	.....
Other countries	3,594	3,302
Coke	31,534	70,989

Hampton Roads Pier Situation

N. & W. piers—Lamberts Pt.:	April 5	April 12
Cars on hand	2,074	1,530
Tons on hand	133,348	99,747
Tons dumped for week	123,401	138,901
Tonnage waiting	18,150	30,000
Virginian y. piers, Sewalls Pt.:		
Cars on hand	1,145	1,646
Tons on hand	63,367	94,940
Tons dumped for week	153,255	94,582
Tonnage waiting	1,261	2,312
C. & O. piers, Newport News:		
Cars on hand	2,915	2,570
Tons on hand	152,735	135,335
Tons dumped for week	80,726	118,168
Tonnage waiting	1,605	1,050

Pier and Bunker Prices, Gross Tons

PIERS

	April 7	April 14†
Pool 9, New York	$6.20@$6.75	*$6.25@$6.65*
Pool 10, New York	5.50@ 6.00	5.50@ 6.00
Pool 11, New York	4.75@ 5.50	*4.50@ 5.50*
Pool 9, Philadelphia	6.45@ 6.90	*6.35@ 6.80*
Pool 10, Philadelphia	5.55@ 6.00	*5.45@ 5.85*
Pool 11, Philadelphia	4.60@ 5.00	*4.50@ 4.90*
Pool 1, Hamp. Roads	6.25	*6.00@ 6.25*
Pools 5-6-7 Hamp. Rds.	5.70	*5.50*
Pool 2, Hamp. Roads	6.25	*6.00@ 6.25*

BUNKERS

Pool 9, New York	6.50@ 7.05	*6.55@ 6.85*
Pool 10, New York	5.80@ 6.30	5.80@ 6.30
Pool 11, New York	5.05@ 5.80	*4.80@ 5.80*
Pool 9, Philadelphia	6.75@ 7.00	*6.65@ 6.90*
Pool 10, Philadelhia	5.80@ 6.35	*5.70@ 6.25*
Pool 11, Philadelphia	4.85@ 5.30	*4.75@ 5.20*
Pool 1, Hamp. Roads	6.35	*6.25*
Pool 2, Hamp. Roads	6.35	*6.25*

Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations, by Cable to *Coal Age*

	April 7	April 14†
Admiralty, large	37s.6d.@40s.	**40s.**
Steam, smalls	30s.	30s.
Newcastle:		
Best steams	35s.	35s.
Best gas	35s.	**33s.@35s.**
Best bunkers	32s.@36s.	*32s.6d.@35s.*

† Advances over previous week shown in **heavy type**; declines in *italics*.

News Items From Field and Trade

ALABAMA

A temporary order was granted April 7 by Judge William I. Grubb, in the U. S. District Court at Birmingham **restraining the United Mine Workers from interfering by picketing or otherwise with the operation of the Beltona mine of the American Fuel Co.**, which alleged in petition to the court that it is engaged in supplying coal for trains operating in interstate traffic. The bill of complaint set forth that pickets "by force, threats of violence, jeers and other offensive conduct" prevented miners continuing in employment or accepting employment by the coal company and that such action had lessened the output of the mine to such an extent that its contracts with the Louisville & Nashville R.R. had been seriously interfered with. The order is directed against the national organization, district No. 20, and its officers, Beltona local and its officers and several individuals, including two district organizers. No date has been fixed for a hearing in the matter. The order is effective for ten days. Three hundred union miners employed at the mine have been on strike three weeks.

Deals are pending involving a consideration of $13,000,000 or more whereby developed and undeveloped coal properties in the Birmingham district will change hands if consummated. New York and Pittsburgh interests are said to be negotiating for the purchase of extensive mining interests, including a large acreage of undeveloped lands in Walker and other counties controlled by L. B. Musgrove and associates, the consideration reported as being around $3,000,000. Other interests are negotiating for the purchase of plants and equipment and coal tracts of two of the larger independent commercial companies, which it is stated will involve a consideration around $10,000,000. If the deals go through, the new owners contemplate extensive improvements and enlargements, including possibly byproduct coke ovens. Definite information is yet unavailable but deals are reported progressing satisfactorily.

CONNECTICUT

Bridgeport retail dealers have announced **a cut of $1 per ton in the prices of domestic sizes of anthracite.** They will sell for $15,50 per ton with pea coal at $14.

ILLINOIS

The Egyptian Coal & Mining Co., with two large mines at Marissa, capable of producing 2,500 tons daily are now sales agents for the entire output of the Nashville Mining Co. mine at Nashville. The maximum output for this mine is 1,000 tons a day.

Arthur Ratcliffe is drilling for No. 1 vein coal five miles west of Geneseo, with the idea of opening a wagon mine, on a cement highway connecting Geneseo and Moline.

Loss of approximately $6,000 was sustained by the Black Star Coal Co. recently when a group of houses belonging to the company was totally destroyed by fire. Miners in the employ of the company were living in the houses at the time and the loss is said to have been only partly covered by insurance.

The O'Gara Coal Co. has called a special meeting of stockholders to be held April 28 to vote on the plan **to increase the capital stock** from $6,000,000 to $16,000,000.

Articles of incorporation have been issued to the **West Side Coal Co.**, of Danville. Capital stock is listed at $25,000 and the incorporators are Al. L. Delvalley, A. J. Delvalley and Joseph F. Skelton. The company will engage in the mining of coal, fireclay, ores, metals and minerals.

Recent reports on the **Kathleen mine**, at Dowell, controlled by the Union Colliery Co., of St. Louis and Chicago, indicate that the mine **is being developed at a rapid pace.** The output of the plant has increased steadily until it now averages in the neighborhood of 4,000 tons daily. The company recently completed a 500-ft. drive through a solid rock fault and is now running entries on the other side of the fault. The output of the mine is expected to reach 8,000 tons some day.

The Illinois Central R.R. is contemplating the construction of a third track between Duquoin and Centralia to take care of the ever increasing coal traffic over that division. At the present time a third track is maintained between Du Bois and Duquoin, but the completion of the track into Centralia would facilitate the handling of the heavy tonnage immensely.

W. C. Schroeder, who has been Chicago sales manager for the Union Colliery Co. of St. Louis, Mo., leaves that company May 1. He is not yet ready to announce a future plan now taking form. Mr. Schroeder was a man of ripe experience in selling midwestern coals through Iowa before he went into the bigger selling field centering at Chicago, where he did a great deal to make well known the name of Kathleen coal produced and sold under the direction of Eugene McAuliffe, then president of the Union Colliery Co. This coal will hereafter be handled in Chicago territory by the Sheridan Coal Co.

INDIANA

Bids for 30,000 tons of coal were opened by the Ft. Wayne board of works recently. Eighteen firms were represented by the bids which range from $1.45 to $2.75 per ton. The contracts call for a regular weekly shipment from May 1 of this year to April 30 of next year. All bids were taken under advisement, the board members deciding that samples of the coal be submitted for their consideration. It is probable that the contract will be awarded soon.

Sealed proposals for approximately 7,500 tons of coal for the Auburn light and power plant were opened by the Auburn City Council recently. Thirty-three firms submitted bids. Any one of the estimates submitted will save the city at least $1 a ton, or nearly $8,000 for the year's supply. Proposals varied from $2 per ton for Indiana fourth vein (freight rate $1.83 a ton) to $3.40 per ton for Hazard No. 4 mine run (freight rate $2.90). The bids submitted will be considered soon.

The Calora Coal Co., with offices in Terre Haute, **has gone into the hands of a receiver** following a suit in the Superior Court of Vigo County by Mrs. Martha J. Jones, widow of the company's president, for settlement of account. John T. Reed, manager of the Indiana Refining Co., was appointed receiver and is ordered to sell all or any part of the property necessary to meet the demands of the creditors.

Considerable preparation is being made for the **Indiana coal traffic case,** to be heard soon before the Indiana Service Commission. The case affects the rates on Indiana mined coal for intra-state shipment. Cities in various sections of the state are compiling data which are being turned over to the Indiana State Chamber of Commerce, which will present the case through its traffic department.

The Akin-Burton Coal Co. has incorporated to produce and sell coal. Directors are Charles T. Akin, Sedgwick R. Akin and Charles E. Burton. The capital stock of the corporation is $50,000.

KANSAS

When the Jackson Walker Coal Co. closed its mine No. 16, near Pittsburg, **the miners petitioned Governor Jonathan Davis to compel the company to reopen it.** The petition carried the proviso, however, that the Governor should not put the matter before the Industrial Court. After other mines in the district were closed and other miners added their pleas the Governor promised a "personal investigation." Bernard Harrigan, Kansas commissioner for the Southwest Interstate Coal Operators' Association, said: "If the Governor will supply us with the market, we will run the mines." Operators add that the capacity of the mines being kept open is at least 10,000 tons a day more than is now being produced. Among the mines now closed in the vicinity of Pittsburg are Clemens Nos. 20 and 21, Sheridan Nos. 12, 14 and 16, Crowe No. 15, Girard Coal No. 7, Jackson Walker No. 16, Carbon No. 6, United States Nos. 1 and 2, Minden, Mine H; and one Liberal mine. **The Cherokee Coal Co.** within a few days **will close twelve of its mines** in Kansas.

KENTUCKY

The Pioneer Coal Co. of Kettle Island, whose tipple was recently destroyed by fire, has contracted with the Roberts & Schaefer Co., for a screen and loading booms to be installed in the new tipple which is expected to start up soon.

MARYLAND

In a recent issue of *Coal Age* it was stated that the **Equitable Fuel Co.**, Maryland Trust Building, Baltimore, had increased its capital stock to $10,000. **The company's capital has been increased from $20,000 to $30,000,** by the issuance of new stock.

Sealed proposals will be opened by the Superintendent of Lighthouses, Baltimore, at 2 p.m., June 5, 1923, **for furnishing anthracite No. 3 and bituminous steaming coal** for stations and vessels, 5th Lighthouse District, as required during the fiscal year ending June 30, 1924. Information on application.

MINNESOTA

Representatives of the Federal Fuel Distributor have been interviewing representatives of the coal trade in the Twin Cities **to ascertain what could be done to avert further coal shortages.** They interviewed wholesalers and retailers separately and, according to report, obtained some of the family gossip which each side furnishes against the other. They learned that there would be no autumn fuel shortage if the wholesale trade would buy coal earlier in the season, if the consumer would buy a three months' supply at once, and if dealers would buy earlier, thus providing steadier employment for the miners, resulting in more satisfaction and probably lower prices because the mines would be kept longer in operation and railroads would be able to handle coal better in summer than in winter. It was further unearthed that dealers did not buy early because they feared a price drop which might leave them with high-priced coal on which to take a loss. All of which is about as fresh as if it had been deciphered among some of the hierophyphs exhumed with King Tut-Ankh-Amen.

Fargo, N. D., and its sister city across the line, Moorehead, Minn., **are about out of fuel.** Neither city has had hard coal for some time, and now soft-coal substitutes have about reached their bottom—including lignite, briquets and coke.

MISSOURI

Announcement has been made at Bethany, that **a large New York syndicate is considering opening a coal mine at Cainsville** and using the fuel to generate power in that town for a large light and power system.

John Gantner and son, Leonard, have obtained a lease on the Schler farm, three miles southwest of Boonville, where they have unearthed a rich vein of coal.

The City Council of Bethany has announced that **a test of two months will be made with Illinois coal** at the city power plant to determine whether a saving in the fuel bill can be brought about. At present Iowa coal is being used, but no additional contracts will be awarded until the test is made.

NEW JERSEY

The State Board of Taxes and Assessment has **reduced from $1,170,145 to $313,662 the assessment** on personal property levied by the Saddle River, Bergen County, Tax Board **against the Pennsylvania Coal Co.** for 1922. The assessment was levied against coal mined and stored in the Township of Saddle River. The State Board held that the method of assessment followed by the Township Board was erroneous.

Retail dealers in Trenton have **reduced the prices for domestic sizes of anthracite** $1 per ton and 75c. for pea coal, making the prices $13.50@$14 for the larger coals and $11.15@$11.50 for pea coal.

NEW YORK

The Chicago Pneumatic Tool Co. announces that Robert F. Eissler, who, during the past two years, has been assistant to the vice-president, assumed his former position as district manager at Pittsburgh April 1. The appointment was announced of Nelson B. Gatch as assistant to the vice-president, headquarters at New York, succeeding Mr. Eissler. The appointment also was announced of William C. Straub as district manager of New York, to succeed Mr. Gatch, promoted.

In discussing **New York City's investigation of the coal situation** at a meeting of the Board of Estimate, April 12, Mayor Hylan said that if the Walker-Donohue transit bills are passed he will stop the Berwind-White Coal Co. from supplying the city's transit lines with fuel. The discussion that led to these remarks was the debate on a date for the city's hearing and investigation of the fuel situation that was blamed for the inadequate supply and the high prices for coal during the winter. The hearing will be held in the Board of Estimate chamber. The date will not be fixed until after the fate of the Mayor's transit bills is known. Neal J. Ferry, of the miners' union, testified before the board and said the operators were to blame for recent conditions.

The Burns Brothers plan of reorganization is expected to make its official appearance soon. No financing other than the offering of common stock to present holders will be necessary. The plan is said to call for retirement of two classes of preferred in exchange for present class A stock. Class A holders will receive free one share of the new common, which will pay a dividend of $2.50 a year for each share of A stock. In addition present holders will be offered an opportunity to subscribe to the new common at $35, proceeds to be used for retiring present outstanding preferred shares. The additional common shares, paying $2.50 a year, will mean a total return on present A stock of $10.50 a year.

OHIO

The Plainview Coal Co., Cambridge, capital $50,000, has been incorporated by A. V. Ferguson, C. F. Crow, A. T. Saviers, D. M. Wilson and Charles J. Bushdale.

The P. & O. Mining Co. has closed its Cincinnati office and **E. Manning**, who had charge, returned to Louisville, where he will be connected with the **Ballard & Manning Coal Co.**

Bids will be opened May 7 by the Columbus Board of Education for 12,000 tons of run of mine bituminous coal for the public schools for the coming winter. Active bidding is expected on this business.

The City Board of Purchase of Columbus has rejected all bids for 13,000 tons of nut, pea and slack opened recently because they were believed to be too high. Bids on the same tonnage for the municipal light plant, garbage disposal plant and the waterworks department will again be opened May 2.

Acting on an invitation extended by the Cincinnati Coal Exchange, officers of the **Michigan, Ohio and Indiana Retail Coal Dealers Association, will hold their annual convention in the Queen City** and have named May 22, 23 and 24 as being the dates acceptable. B. F. Nigh, secretary of the association, visited Cincinnati last week to make the preliminary arrangements.

The Besola Coal Co., St. Clairsville, capital $25,000, has been incorporated by **W. E. Lahm, J. O. Somers, B. H. Beatty, Laura L. Somers and Emma C. Beatty.**

PENNSYLVANIA

The Hillman Coal & Coke Co. has ordered 300 55-ton cars from the Standard Steel Car Co. and 300 70-ton cars from the Pressed Steel Car Co. The orders involve about $1,350,000.

H. J. German was elected president of the **Montour Railroad Co.** by the board of directors, effective April 3, 1923.

A six-hour day and minimum pay of $10 a day was predicted for the miners by George Isaacs, vice-president of District No. 1, United Mine Workers, at a mass meeting of miners held in Wilkes-Barre on April 2 in observance of the Eight-Hour Day.

Charged with being responsible for the mine gas explosion at Spangler, Cambria County, in which 77 men lost their lives, **W. H. Young**, superintendent of the Reilly mine, and **O. J. Flanagan**, mine foreman, **have each entered $1,500 bail for trial at court.** The men are charged with involuntary manslaughter. The explosion occurred in November, 1922.

The Judiciary Committee of the State Legislature **has reported affirmatively the Burns bill** giving the Public Service Commission power over the distribution and price of coal in this state. The vote as reported was 11 to 6. Protests against the bill have been made, coal operators contending that it will impose considerable additional expense, inasmuch as it will increase the cost of mining and also the cost to taxpayers.

There were twenty-three "outlaw" strikes in anthracite mines between Dec. 16, 1922, and Feb. 28, 1923, which involved suspension of work by 25,825 men, who lost $732,544 in wages, according to figures just compiled by the Anthracite Bureau of Information. The tonnage lost in the period of inactivity was in excess of 243,000 tons. "In the majority of the cases the cause for the strike was an attempt to enforce union discipline rather than any grievance against the companies," the statement of the operators said. "Under the agreement, all of the disputes leading to these strikes should have been settled by reference to the Conciliation Board."

Bituminous interests joined with the representatives of the anthracite regions to **oppose the Kohler mine-cave bill, the bill compelling coal companies to permit engineers employed by surface owners to enter the mines for the purpose of inspection and a third bill prohibiting the laying of gas pipes over mined-out areas.** A hearing on the bills was held April 10 and Representative Kohler, sponsor of all three measures, fought a lone battle before the House subcommittee of the Mines and Mining Committee. The bills were opposed by P. F. Murphy and G. B. O'Hara, of the Glen Alden Coal Co.; G. P. Gallagher, Lehigh Valley Coal Co.; P. H. O'Brien, Pennsylvania Coal Co., and Edward Griffiths, Lehigh & Wilkes-Barre Coal Co.

The Fowler full-crew bill, introduced in the State Legislature by David Fowler, **is being supported by the so-called anthracite bloc.** It is said they will vote as a unit in favor of the bill to put it on the calendar.

Sealed proposals will be opened by the Superintendent of Lighthouses, Philadelphia, Pa., 2 p.m., May 15, 1923, **for anthracite and bituminous coal,** gasoline, acetylene and acetone for the fiscal year 1924. Information on application.

Production for the six Johnstown mines of the Cambria Steel Co. for the month of March was 222,325 tons, which is the largest tonnage ever produced from these mines in a single month and is 35,000 tons greater than the previous record month, January, 1923. The production of the Slickville mines, in Westmoreland County, for the same month was 61,040 tons, making a combined tonnage for Slickville and Johnstown of 283,365 tons. The mines of the Union Coal & Coke Co., subsidiary of the Midvale Steel & Ordnance Co., located in Washington County, produced 158,743 tons, making a grand total of 442,108 tons for the entire department. J. C. H. Lubken is general superintendent of coal mining operations for the Cambria Steel Co, and the subsidiary concerns. A daily record for the Johnstown mines was made on March 28, when production reached 8,897 tons, and the combined record of 18,004 tons for all the mines was made the same day.

The men at the Lilley Coal & Coke Co., a union mine in Washington County, on the Monongahela River and the Pennsylvania R.R. a short distance below West Brownsville, have been on strike for the past three weeks in violation of their agreement. The trouble was caused by two of their men leaving their employ last autumn to work as union organizers in the non-union Connellsville coke region, and then coming back about three weeks ago and wanting their old jobs back, which were denied them. There is no more sign of a termination of the trouble than when it started, and **the strikers have been ordered by the company to return to work** in accordance with their agreement or vacate the company's houses.

Shipments of anthracite for the month of March, as reported to the Anthracite Bureau of Information, Philadelphia, amounted to 7,183,518 gross tons, as compared with 6,778,667 gross tons during the corresponding month last year, an increase of 404,851 tons, or about 6 per cent. Shipments of anthracite have exceeded 7,000,000 tons only six times previous to March of this year, and these were all in the war years of 1917 and 1918, when the washery tonnage was much more of a factor than it is at the present time. The March shipments exceeded those of February this year by 1,231,805 tons, or 20.7 per cent. Shipments by originating carriers were as follows, in gross tons:

	March 1923	February 1923
Phila. & Reading	1,370,476	1,206,538
Lehigh Valley	1,279,599	1,097,351
Jersey Central	622,710	521,430
Lackawanna	1,146,217	957,612
Delaware & Hudson	907,099	629,514
Pennsylvania	542,167	483,466
Erie	818,817	712,210
N. Y., O. & W.	192,247	169,176
Lehigh & New Eng.	304,186	174,416
Totals	7,183,518	5,951,713

The Bethlehem Steel Co. has absorbed the coal properties of the Midvale Steel & Ordnance Co. with the amalgamation of the steel companies. Thus the Acme, the Marianna and the Hazelkirk mines of the Union Coal & Coke Co., formerly having offices in Bentleyville, are now part of the Bethlehem Mining Co. with offices at Ellsworth.

The Judge Coal Co. of Scranton, with banks containing 1,500,000 tons of coal at Jessup, has recently incorporated with the following officers: Ed. A. Judge, president; Hubert Gordon, secretary; John J. Bolan, treasurer, and George Bell, superintendent.

The Tip Top Coal Co., of Scranton, with an operation at Scotch Valley, Columbia County, has incorporated with the following officers: W. L. Henwood, president; Boyd A. Musser, vice-president; Alfred E. Lester, treasurer; George E. Schultz, secretary, and E. A. Jones, superintendent.

The following companies were incorporated at the State Department, Harrisburg, recently: **Eureka Mining Co.,** DuBois, capital $15,000; James Jones, DuBois, treasurer; William Harringer, James Jones and J. J. Pentz, DuBois, incorporators. **The Miners Powder & Supply Co.,** Latrobe, $10,000; H. L. Donaldson, Ligonier, treasurer; John J. Crumbaugh, Latrobe; S. S. Brownfield and H. L. Donaldson, Ligonier, incorporators. Purpose: Dealing in explosives and mine supplies. **George A. Clark, Inc.,** Hastings; $5,000; George A. Clark, Hastings, treasurer; L. S. Clark and Louise Clark, Cherrytree, and George A. Clark, Hastings, incorporators. **Red Dog Coal Co.,** Pittsburgh; $10,000; incorporators, S. M. Kintner, H. Talbot Peterson and A. J. Loeffler, Pittsburgh.

The Cement Gun Co., Inc., Allentown, announces the resignation of W. J. Roberts as president of the company and the election of B. C. Collier to fill the vacancy. Mr. Collier has for several years occupied the position of vice-president and general manager of the company.

The stockholders of the **Glen Alden Coal Co.** at their annual meeting held at Scranton re-elected the following directors: F. J. Platt, F. H. Hemelright, John H. Brooks, J. Hayden Oliver and W. W. Inglis. At the reorganization meeting the following officers were re-elected: W. W. Inglis, president; S. D. Dimmick, vice-president and general manager; George England, secretary-treasurer; James L. Dodson, assistant secretary-treasurer. Mr. Inglis stated after the session that the matter of dividends was not considered by the directors.

The Rochester & Pittsburgh Coal & Iron Co. reports for 1922 gross earnings of $4,297,327; net profit after expenses, depreciation, etc., $556,658, and a surplus after cash dividends of $316,658. The balance sheet as of Dec. 31 last shows cash of $416,751, accounts receivable $4,001,927, accounts payable $3,688,503, profit and loss surplus $1,848,604 and total assets and liabilities of $16,380,763.

Reports from Somerset County, where an attempt was made to call out the non-union miners on strike on April 1, are to the effect that **there has been no drop in production.** The shipments on the last four working days of March were 265, 277, 219 and 168 cars respectively, while on the four first days of April there were 91, 205, 275 and 260 cars, respectively. The low shipment on the first day was due to Easter Monday, when but few of the foreign miners work at any time.

J. C. H. Lubken, retiring head of the Midvale-Cambria mines, was the guest of honor at a farewell gathering held at the Fort Stanwix Hotel, Johnstown, sixty officials and associates in the Cambria Steel Co. attending. Greetings also were extended to the new officials, T. R. Johns, manager of the Bethlehem coal mines, and Samuel Steinback, new division superintendent at Johnstown. Frank Horton, superintendent of mines at Johnstown, was toastmaster. Charles Young, mining engineer, T. R. Johns, of Bethlehem, and Mr. Steinback spoke. During Mr. Lubken's service in the Johnstown district he supervised the opening of seven mines, notably the two Rosedale shaft mines.

L. V. Walsh, for about twenty years treasurer and general manager of sales of the Pittsburgh Shovel Co., Pittsburgh, has resigned. **C. B. Steffey,** since 1917 secretary of the company, has been appointed general manager of sales and also retains his office as secretary.

UTAH

There are various reports that Los Angeles capitalists are soon **to develop coal lands around Provo,** county seat of Utah County. A big smelter also may be erected in that county, but details of this enterprise are meager.

VIRGINIA

Suits aggregating approximately $175,000 have been filed by the Norfolk & Western Ry. against four coal concerns with agents in Norfolk, for alleged demurrage due on carloads not released from the railroad tracks within the five-day free period. Beyond that period the railroad claims $2 per car per day. The suits, with their amounts are: Dexter & Carpenter, $1,990; West Virginia Coal Co., $2,183.06; Jewett, Bigelow & Brooks, $46,320; Algonquin Coal Co., $124,012.63.

WASHINGTON

The College of Mines of the University of Washington offers **five fellowships for research in mining, metallurgy and ceramics** in co-operative work with the Bureau of Mines. The fellowships are open to graduates of universities and technical schools who are qualified to undertake research investigations. The value of each fellowship is $810 per year of twelve months beginning July 1. Applications, which should include a copy of the applicant's collegiate record, should be sent to Dean Milnor Roberts, College of Mines, University of Washington, Seattle, not later than May 10.

WEST VIRGINIA

The Lost Creek Coal Co., of Clarksburg and Pittsburgh, has purchased the holdings of the Elk Smokeless Coal Co., owning a large tract of smokeless coal at Holley Junction, near Richwood. The consideration was not made public.

Miners of the Hutchinson Coal Co. are at work again after an unauthorized strike at the Mount Clare mine of the company in Harrison county, the strike growing out of a misunderstanding as to the terms of the new contract.

A death blow is believed to have been dealt to the Sutphin bill, having for its object the repeal of the law creating the West Virginia state police, in the House of Delegates on April 9 when **a motion to take the bill up out of its order** and advance it on the calendar **was decisively defeated** by a vote of 57 to 31. The bill had been before the House Judiciary Committee and was strongly supported by the United Mine Workers as well as by the State Federation of Labor. The miners' organization had counted on having a small margin over the opponents of the bill.

The Atlantic Smokeless Coal Co., whose annual meeting was recently held in southern West Virginia, has increased its capital stock from $250,000 to $300,000.

The Appalachian Power Co., Glenlyn, **is increasing its boiler-plant capacity** in order to keep up with the demand for electricity by the coal mines. Four Westinghouse underfeed stokers will fire four 1,232-hp. B. & W. boilers with Pocahontas coal. The installation will include power-operated dump grates, extension sidewall tuyeres; turbines will drive the stokers as well as the fans while Diamond double chain will transmit power from the turbines to the stokers.

The West Virginia Rail Co., Huntington, has decided **to add another unit to its plant** for the manufacture of frogs and switches, steel mine ties, and steel mine timbers. This addition will enable the company to furnish the mining industry complete track equipment from one point of shipment. This addition will cost in the neighborhood of $250,000 and the company hopes to be in position to make deliveries of this class of material within six months.

The Pan Coal Co. was awarded $25,566 in damages in its suit against the Garland Pocahontas Coal Co. a few days ago in southern West Virginia. A motion to set aside the verdict was taken under advisement by Judge I. C. Herndon. The plaintiff claimed damages in the sum of $100,000, alleging that the defendant had removed 27,000 tons of coal from plaintiff's land and had otherwise damaged the property. The jury decided upon 12,000 tons as the amount taken from the mine and estimated its value at $2 per ton.

The Eagle Island Coal Co. has just finished work on a **steel tipple and 700-ft. conveyor** at Crites, in the Logan field. In order to mine coal from an additional seam in Logan County the **Bengal Coal Co. has constructed a new tipple** at Kistler. The **Draper Eagle Coal Co. is constructing a modern steel tipple** near Logan. **The H. T. Wilson Coal Co.** is another concern in the Logan field which **is enlarging** the scope of its operations, being engaged in sinking a shaft to another vein. **The Island Creek Coal Co.**, one of the largest companies in the state, is now **engaged in opening several additional mines** on the acreage near Whitman. As a result of these improvements as well as through the installation of additional mining equipment, it will be possible to ship more coal than ever from the Logan field if car supply and market conditions are at all satisfactory.

The Riverside Coal Co. has been organized at Morgantown by George W. Simpson and West Virginia parties, with a capital stock of $150,000.

WISCONSIN

Formal announcement is made by **the Central Coal Co.** that it **has sold its coal docks** on the Menomonee River, Milwaukee, and at Escanaba, Mich., **to the Industrial Coal Co.**, of Pittsburgh, Pa. The consideration is given as "more than $500,000." It is said the Industrial Coal Co. is backed by Burns Bros. of New York, and that a $10,000,000 merger of coal interests in Pittsburgh, New York and the Northwest is being promoted. The Central Coal Co. will confine itself to the handling of Illinois coal by rail.

A bill before the Wisconsin legislature which would impose an occupational tax on coal on the docks at receiving points in the state, is being fought. **The bill would put a tax on dock coal but would not affect coal shipped by rail.**

Paul H. Pressentin of the Wisconsin Fuel Administration, **urges dealers to begin a campaign at once for coal orders for delivery when Lake cargoes arrive.** He suggests a system of credits when conditions warrant such action. He holds that cleaner and better coal, with smaller moisture content, will be secured if orders are placed early. Mr. Pressentin warns dealers against brokers who booked their orders during the past season and failed to fill them, or who cut in on their local trade. He says country dealers were at least entitled to a reasonable portion of their orders.

WASHINGTON, D. C.

A collection of samples of anthracite for the U. S. Coal Commission has been gathered by the Bureau of Mines for the purpose of **determining the percentage of coal, bone and slate contained in the supplies arriving at Washington.** Other coal information given out by the bureau includes a report with regard to the coal requirements of the various hospitals of the United States Veterans' Bureau. The Bureau of Mines also is collecting tipple samples at twenty coal mines on government property in Oklahoma.

CANADA

General repairs to approximately 300 lineal feet of the timber superstructure of **West pier** together with minor repairs to other portions of the departmental works at Rondeau, Ont., is to be undertaken during the fiscal year 1923-24. Ten thousand dollars has been allotted for this purpose.

Approximately half of the coal used by the Pere Marquette and Canadian National railways in western Ontario is imported by car ferry and collier in connection with the operations of the Lake Erie Coal Co. and the Marquette & Bessemer Navigation Co. between Rondeau and Conneaut, Ohio. The imports in 1921, consisting largely of coal, amounted to 250,450 tons.

The United Gas & Fuel Co., of Hamilton, Ont., has let contracts for the **construction of a byproduct-coke-oven plant** representing an investment of $2,500 000 to be completed by Nov. 1 which will give employment to 250 men. The plant will be erected by the Hamilton By-Product Coke Oven Co. which has a contract with the Semet-Solvay Co. of Syracuse, N. Y., under which they will be able to adopt the latest designs and processes for the manufacture of coke. The work has been rendered necessary by the decrease in the supply of natural gas, on which the United Gas & Fuel Co. was largely dependent.

News that Hamilton, Ont., is to have a $2,500,000 byproduct coke-oven plant has revived **talk of another oven at Ojibway**, near Windsor, where the Canadian Steel Corporation has spent millions on its steel plant. Completion of the project, it is stated, means another byproduct plant where most of the product will go to feed the blast furnaces, but it is believed there will be a surplus for domestic use.

Floating docks may soon be placed at Prince Rupert, B. C., for the handling of coal shipments from the Cadomin mine section of Alberta. It is stated that 2,000 tons a day will be provided from this field to supply the mercantile demands at the northern provincial port.

Since the disaster of last February in No. 4 mine, Canadian Collieries (D), Ltd., Cumberland, B. C., there have been **a number of prosecutions for infractions of the Coal Mines Regulation Act** by underground workers. In one case a Montenegrin miner was fined $10 and costs for taking into the mine a Wolf safety lamp that had not previously been examined by a competent person. A Chinaman was sent to jail for thirty days for taking underground a key to an electric safety lamp. It is understood that other prosecutions under the act will follow.

The Canadian National Railway is considering the establishment of reduced rates on coal from Alberta in order that the coal can compete with the American product in Ontario and Quebec, according to Sir Henry Thornton, president of the road, in a recent interview at Ottawa. The most advantageous time to bring out coal would be between April and August, Sir Henry declared.

The United Mine Workers of the maritime provinces district have affiliated with the Third Internationale, an envoy having been sent to Russia for that purpose. The district is defying the order of International President John L. Lewis to withdraw from the Internationale.

Recent Patents

Coal-Loading Device. Lester W. Parsons and Charles W. Morgan, Cristobal, Canal Zone, and Albert R. Hussey, Boston, Mass.; 1,435,730. Nov. 14, 1922. Filed March 6, 1920; serial No. 363,910.

Lamp Holder for Miners' Caps. Henson Davis, Roundup, Mont.; 1,435,817. Nov. 14, 1922. Filed Dec. 22, 1919; serial No. 346,447.

Rock Drill. Joseph Beaudry, Philadelphia, Pa.; 1,436,470. Nov. 21, 1922. Filed Oct. 22, 1920; serial No. 418,698.

Take-Up for Skip-Hoist Ropes. Robert H. Beaumont, Radnor, Pa., assignor to R. H. Beaumont Co., Philadelphia, Pa.; 1,436,566. Nov. 21, 1922. Filed Feb. 1, 1922; serial No. 533,213.

Safety Device for Steam Shovels. Lee Trower, Wilkinsburg, Pa.; 1,436,737. Nov. 28, 1922. Filed Jan. 21, 1922; serial No. 530,889.

Carrier Having Gripping Device for Use with Aerial Ropeways. John P. Roe, deceased, London, England, by Lucy J. Roe, executrix, London, England; 1,436,911. Nov. 28, 1922. Filed May 31, 1922; serial No 564,944.

Coal Auger. George E. Williams and J. E. Stultz, Stone, Ky., and R. E. Hill, Roanoke, Va.; 1,437,033. Nov. 28, 1922. Filed Sept. 27, 1920; serial No. 412,917.

Traffic News

The embargo placed by the New York Central R.R. **against** all freight destined to points on or **via the New York, New Haven & Hartford R.R. and Central New England Ry. was entirely cancelled** April 11.

The embargo placed by the Erie R.R. on carload and less carload freight from connections and Erie system stations for or via the D. & H., Binghamton, except livestock, anthracite coal, perishable freight, bituminous coal for railroad supply, field and garden seeds and such other freight as permitted by the D. & H. subsequent to March 2 was **modified April 10** to allow to go forward all freight for delivery at points on D. & H. lines via Binghamton.

On account of accumulation an **embargo was placed** March 31 by the New York Central R.R. against the acceptance of all carload and less than carload freight from all New York Central R. R. stations and from connections at all junctions for points on or via the Boston & Maine R.R. except livestock, perishable freight, Boston & Maine R.R. fuel and supplies and freight consigned to an officer of the U. S. Government.

In order to effect reduction in accumulation of cars for the B. & M. R.R. an **embargo was placed April 7 by the Boston & Maine on all coal, except railroad supply coal**, from and via the Delaware & Hudson Co., New York Central R.R. and Rutland R.R. at all junctions. This embargo automatically expired April 16, 1923.

On account of accumulation **an embargo has been placed by the New York Central R.R. against all shipments of coke** consigned, reconsigned or intended for the **McKinney Steel Co.**, Charlotte, N. Y. Shipments originating principally at Cleveland, Ohio.

The embargo placed by the New York Central R.R. against all freight from connections at 60th or 68th Street, New York City, Weehawken, National Junction or Harsimus Cove, for points on or via the Boston & Albany R.R. **was entirely cancelled April 11.**

To prevent an accumulation the New York, New Haven & Hartford R.R. on April 7 **embargoed all freight coming from the B. & A. and B. & M.** for delivery on bulk (team) tracks of the N. Y., N. H. & H. at Boston, Mass., or in Boston switching district.

Newport News is making a determined effort to obtain lower freight rates on anthracite. The present rates of $4.30 and $4.96 per gross ton to Newport News via the two available routes are higher by 90c. per ton and $1.56 per ton than the corresponding rate in effect to Norfolk and Richmond, Va. It is contended that Newport News is located on the same harbor as is Norfolk and is geographically nearer the coal field and customarily takes the same rates on other traffic as do Norfolk and Richmond. The position of the Richmond interests is not to oppose a rate on anthracite to Newport News which is no greater than the rates they enjoy, but the Retail Coal Merchants' Service Bureau and the Chamber of Commerce of that city have intervened to oppose any order of the commission which might be interpreted by the carriers as justification to increase the Richmond rate.

Colonel T. Q. Ashburn, director of inland water transportation of the War Department, made a recent visit to Minneapolis, Minn., announcing that **the government would institute a barge service between the "Twin Cities" and New Orleans,** to carry freight at 80 per cent of railroad freights. Four oil-burning packets, equipped to carry 160 tons of freight, will be installed in the service by June 15, according to J. S. Brodie, president of the River Transit Co. The contract has been let to the Midwest Boat & Barge Co., of Grafton, Ills., for them. The packets will be steel, stern-wheel, and will carry 100 tons each. Colonel Ashburn is to return to the Twin Cities soon in search of freight for the government barges. The government will use the barges, which have been held by Colonel Goltra, of St. Louis, and were recently ordered seized from Goltra for non-performance of contract.

Rates on coal from certain mines on the Kanawha, Glen Jean & Eastern R.R. to destinations on the Chesapeake & Ohio Ry. and its connections have been **found to be unreasonable.** Any rate exceeding the group rates contemporaneously maintained from branch-line points on the Chesapeake & Ohio in the New River district to the same destinations will be regarded as unreasonable.

No less than three roads, the Chesapeake & Ohio, the Kanawha & Michigan and the Baltimore & Ohio, **seek entrance to the Nicholas County coal field.** The first two have already applied to the Interstate Commerce Commission for a certificate of necessity permitting them to extend their lines into this field. Nicholas County coal lands are largely undeveloped, because of their inaccessibility.

The Interstate Commerce Commission has set May 28 as the date of the hearing in connection with the case of the **Ragland Coal Co. vs. the Virginian Ry.** The hearing will be in Washington before Examiner Hillyer.

Rates on coal from Brookside and Drifton, Ala., to Sloss, Ala., have been found unreasonable to the extent that they exceeded $1 per ton from Brookside and $1.10 from Drifton. The finding was made by the Interstate Commerce Commission in the case of the Sloss-Sheffield Steel & Iron Co. **vs.** the Director General.

The Interstate Commerce Commission has decided that **rates on buckwheat No. 2 and smaller from the Wyoming field to the Albany district of New York have been unreasonable** and unduly prejudicial. An order has been issued to the N. Y., O. & W. Ry., the D. & H. and the Boston & Maine to desist from present rates on or before July 6 and to establish by that date rates which shall not exceed the rates maintained by the D. & H. from the Wyoming field to the Albany district on its own direct shipments. The West Virginia Pulp & Paper Co. is declared entitled to reparation under the finding.

The Coal, Coke & Iron Ore Committee, Central Freight Association Territory, announces a public hearing 10 a.m., April 26, at the Chamber of Commerce Building, Pittsburgh, Pa., **to consider cancellation, on account of no movement, of rate of $2.39 per net ton on bituminous coal,** carloads, from mines on the Sandy Valley & Elkhorn, Long Fork and Millers Creek Railroads, to stations on the Lorain, Ashland & Southern R.R., Ashland, Ohio to South Amherst, Ohio, inclusive.

Proposed increased rates on coke from Chicago, Peoria and St. Louis to destinations in southwestern Missouri and eastern Kansas have been found by the Interstate Commerce Commission **not to be justified.**

General Superintendent E. L. Bock of the western division of the Chesapeake & Ohio Ry. stated a few days ago that the recently authorized purchase of **2,000 new 70-ton coal cars** will enable the road to materially increase its car supply in the coal fields. Mr. Bock also states that the road Chesapeake & Ohio planning to add materially to its equipment also is engaged generally in rehabilitating the coal cars heretofore in use.

Rates on bituminous coal from points in West Virginia to Elizabethport and Jersey City have been found unreasonable by a Commerce Commission examiner. The attack on the rates was made by the Seaboard By-product Coke Co.

An enterprising coal man, searching the code of West Virginia, has brought to light a statute long overlooked, regulating car supply within the state. A section provides that "It shall be unlawful for any railroad company to engage, directly or indirectly, in the business of buying and selling coal or coke, or to promise, pledge or lend its credit, money or other property or thing of value to another, either natural or corporate, engaged in such business, but nothing herein shall prevent such corporation from purchasing such articles for its own consumption or when it is the owner of any such commodities from selling and shipping the same; provided in doing so, such corporation shall not discriminate in rates, distribution of cars or otherwise and against other shippers of like commodities on its lines . . . Every railroad corporation along whose lines of railroad the industries of mining coal or manufacturing coke is carried on, shall, without discrimination between or against shippers and without unnecessary delay, make a reasonable provision for the transportation of all such coal and coke offered for transportation over its railroad, and no such railroad corporation shall discriminate in rates, distribution of cars or otherwise against or among shippers of coal or coke offered for shipment on its line or lines."

Representatives of the Elkhorn & Hazard Coal Co., appeared before the State Railroad Commission, at Frankfort, Ky., April 12, **in a plea for reduction of rates from the Whitesburg district to points within the state,** holding that rates now in effect prevent competition with some other state fields.

Association Activities

Grand Rapids Coal Dealers' Association

The Grand Rapids Coal Dealers' Association at a recent meeting elected the following officers: President, Isaac VanHeulen; Vice-President, W. J. Breen; Secretary, C. F. Hatch, and Treasurer, A. B. Knowlson.

Obituary

Alexander Dick, general manager of the Dominion Coal Co., Montreal, Canada, died suddenly April 12 in New York of heart disease while seated in restaurant with friends. Mr. Dick was fifty years old.

John Cain, 47, superintendent of the National coal mine, near West Terre Haute, died suddenly at his home early in April of heart trouble.

Horace O. Stone, lawyer, inventor and chief assistant to William H. Taft in the Presidential campaign of 1908, died April 10 after a stroke of apoplexy suffered while he was sitting in the Union League Club, Chicago. Mr. Stone was born in the Kalamazoo County, Michigan, in 1852. He invented a glass device to prevent damage by freezing of water in engines, methods of producing coke from poor coal and methods of effecting saving in blast furnaces.

Catesby Woodford, 74 years of age, Paris, Ky., prominent as a big coal land owner on the Hazard field, and more prominent as owner, breeder and racer of thoroughbred horses, died at his winter home at Fort Meyer, Fla., on April 8, the remains being taken to Lexington for interment. "Raceland," his Kentucky home at Paris, was one of the finest estates in Kentucky.

Coming Meetings

Pennsylvania Retail Coal Merchants' Association will hold its annual meeting May 23 and 24 at Wilmington, Del. Secretary, W. M. Bertolet, Reading, Pa.

American Association of Mechanical Engineers will hold its spring meeting at Montreal, Quebec, Canada, May 28-31. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Association of Purchasing Agents will hold its eighth annual convention and Informashow at Cleveland, Ohio, May 15-18. Convention headquarters, room 219, Hotel Winton, Cleveland.

The National Association of Manufacturers will hold its 27th annual convention at the Waldorf-Astoria, New York City, May 14-16.

New England Coal Dealers' Association will hold its annual meeting at Providence, R. I., June 13-15. Secretary, C. R. Elder, Boston, Mass.

National Retail Coal Mechants' Association will hold its sixth annual convention June 25, 26 and 27 at Scranton, Pa., with headquarters at the Hotel Casey. The registration fee of $15 will include all meals except breakfast, transportation to and from the mines which will be visited, and the banquets. The only other expenses to be incurred will be hotel room and transportation to and from Scranton. Executive secretary, J. E. O'Toole, Philadelphia, Pa.

National Safety Council will hold its twelfth annual safety convention at the Buffalo Statler Hotel, Buffalo, N. Y., Oct. 1-5. Managing director and secretary, W. H. Cameron, 168 No. Michigan Ave., Chicago, Ill.

International First-Aid and Mine-Rescue meet will be held Aug. 27-29, at Salt Lake City, Utah.

American Institute of Electrical Engineers will hold its annual convention June 25-29, at Swampscott, Mass. Secretary F. L. Hutchinson, 29 West 39th St., New York City.

Coal Mining Institute of America will hold its annual meeting Dec. 19, 20 and 21 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Building, Pittsburgh, Pa.

The Virginia Coal Operators' Association will hold its annual meeting on April 21 at Norton, Va. Secretary, G. D. Kilgore, Norton, Va.

International Railway Fuel Association will hold its spring convention at the Hotel Winton, Cleveland, Ohio, May 21-24, Secretary-treasurer, J. G. Crawford, Chicago, Ill.

The American Mining Congress will hold its twenty-sixth annual convention in conjunction with the **National Exposition of Mines and Mining Equipment,** Sept. 24-29, at the Milwaukee Auditorium, Milwaukee, Wis. Secretary, J. F. Callbreath, Washington, D. C.

Indiana Retail Coal Merchants' Association will hold its annual meeting April 25 and 26 at the Claypool Hotel, Indianapolis, Ind. Secretary, R. R. Yeagley, Indianapolis, Ind.

American Society for Testing Materials will hold its annual meeting at the Chalfonte-Haddon Hall Hotel, Atlantic City, N. J., beginning June 25 and continuing throughout the week. Secretary, E. Marburg, Philadelphia, Pa.

The Colorado & New Mexico Coal Operators' Association will hold its annual meeting June 20 at Denver, Col. Secretary, F. O. Sandstrom, Denver, Col.

The Electric Power Club's annual meeting will be held at the Homestead, Hot Springs, Va., June 11-14. Executive secretary, S. N. Clarkson, Cleveland, Ohio.

National Foreign Trade Council will hold its annual conference May 2-4 at New Orleans, La. Secretary, O. K. Davis, 1 Hanover Square, New York City.

The eleventh annual meeting of the Chamber of Commerce of the United States will be held in New York City May 7-10.

National Coal Association will hold its sixth annual convention June 19-22 at Atlantic City, N. J. Assistant secretary, C. C. Crowe, Washington, D. C.